GEK-36115

TermiNet* 30
PRINTER

OPERATOR'S MANUAL

Electronic Services - Los Angeles
M14575X

GENERAL ELECTRIC

The information contained herein does not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to General Electric Company, USA.

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TermiNet DATA COMMUNICATION PRODUCTS

TermiNet 30 PRINTER

OPERATOR'S MANUAL – GEK-36115A

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PREFACE

This manual is divided into three parts as follows:

Part I	Operator's Manual
Part II	Magnetic Tape Accessory (MTA) Operator's Manual
Part III	Paper Tape Accessory (PTA) Operator's Manual

Part I provides basic information for the operation of the TermiNet 30 Printer. This information includes operation of the keyboard and all switches, controls, and indicators; loading of paper and ink ribbon cartridge; use of escape sequence, control codes, and the Vertical Format Unit (VFU) option; and a description of Printer operating characteristics and fill characters.

Part II provides basic information for most of the operations of the Magnetic Tape Accessory (MTA) with the TermiNet 30 Printer.

Part III provides basic information for most of the operations of the Paper Tape Accessory (PTA) with the TermiNet 30 Printer.

Because of the many communication systems that exist, no attempt is made to show every conceivable operation or application that can be performed with the TermiNet 30 Printer and its MTA and PTA accessories. Consult your supervisor or applications specialist for special instructions regarding use of the TermiNet 30 Printer and accessories with your communications system.

In most cases in the following text, the word "Printer" is used instead of "TermiNet Printer".

Other manuals which may be used in conjunction with this one are listed below.

SERVICE

TermiNet 30 Printer Service Manual	GEK-36113
TermiNet 30 Printer Parts Manual	GEK-36116
Pedestal Service and Parts Manual	GEK-35993

PART I

TermiNet 30 Printer

Operator's Manual

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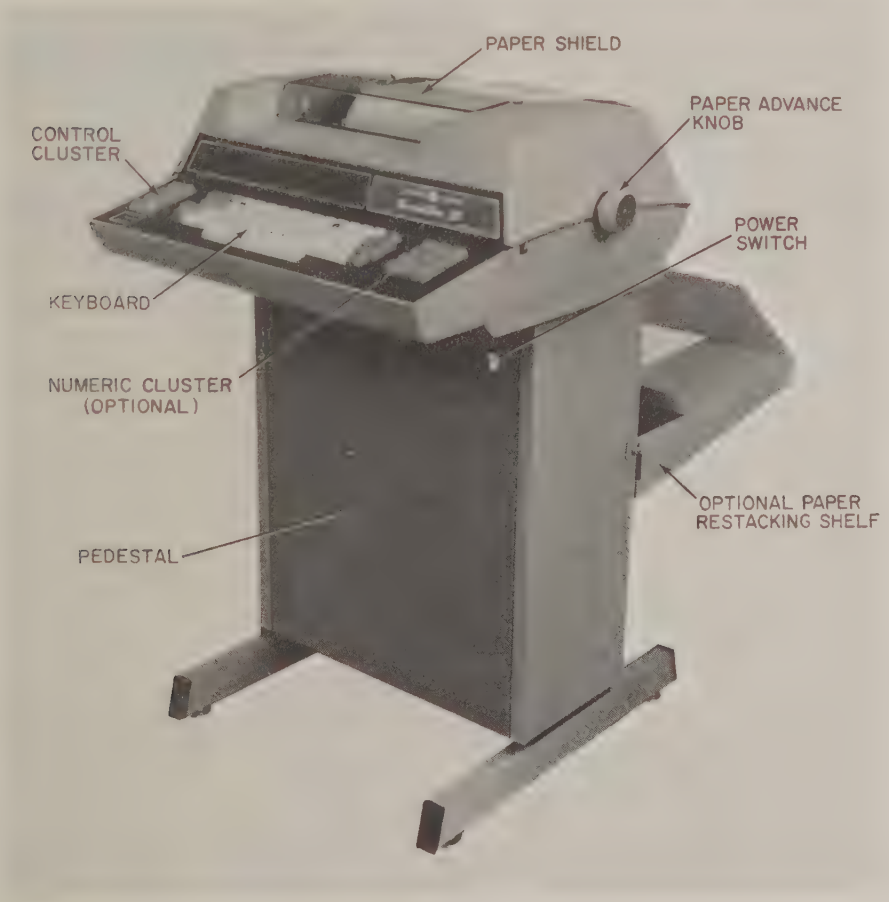
SECTION 1

INTRODUCTION

The TermiNet 30 Printer is a compact, high speed, Matrix Printer, that can transmit, receive, and print information to and from computer systems or other Printers. The TermiNet 30 Printer is mounted on its own Pedestal which is an integral part of the Printer.

Your Printer will be one of four basic models as follows:

1. Keyboard Send-Receive (KSR) - The KSR Printer (Figure 1-1) has a keyboard similar to a standard office typewriter. The KSR Printer can print information generated locally by the keyboard or a local device. It can receive and print information from a remote terminal, computer, or other communication device.



PTL-4080

Figure 1-1. TermiNet 30 (KSR) Printer

2. Send-Receive (SR) - The SR (Figure 1-2) Printer has no keyboard but operates similar to the KSR in all other respects.

3. Magnetic Send-Receive (MSR-1) - KSR with a single magnetic tape cassette accessory which is an integral part of the Printer (not illustrated).

4. Magnetic Send-Receive (MSR-2) - KSR with two magnetic tape cassette units that are an integral part of the Printer (not illustrated).

PTL-4081

Figure 1-2. TermiNet 30 (SR) Printer

NOTE

This manual pertains only to the KSR and SR Printers. However, the operation of the MSR Printer is basically the same as the KSR Printer except for operation of the Magnetic Tape Cassette Accessory. Instructions for operating the Magnetic Tape Cassette Accessory will accompany the MSR Printers.

The general operating characteristics of the TermiNet Printer are as follows:

PRINTABLE CHARACTERS

92 of the 94 printable characters in the American Standard Code for Information Interchange (ASCII) can be printed by the Printer (except with upper case only option). The underline " _ " is replaced by the Back Arrow "←", and the Circumflex " ^ " is replaced by the Up Arrow " ↑ ".

PRINTING, TRANSMISSION, AND RECEPTION SPEEDS

The Printer can transmit, receive, and print data at 10, 20 and 30 characters per second.

The Printer can transmit and receive (but not print) data at 120 characters with the optional magnetic tape accessory.

HORIZONTAL CHARACTER SPACING

10 characters per inch (2.54 cm), 80 print positions.

16.5 characters per inch (2.54 cm), 132 print positions, compressed type option.

VERTICAL LINE SPACING

6 lines per inch (2.54 cm).

PRINT LINE LENGTH

80 print positions.
132 print positions, compressed type option.

COPY

The Printer uses a continuous fan-fold pin-feed paper. An adjustable right pin feed wheel allows the use of paper widths from 4" to 9.5" (10.2 cm to 24.1 cm) inclusive.

The Printer can handle up to a four-part form set with a maximum form set thickness of 0.015" (0.38 mm). Recommended paper weights are:

1 part	15 lb. (6.75 kg) paper
2,3, or 4 part	13.5 lb. (6.07 kg) paper, 8 lb. (3.6 kg) carbon

SECTION 2

PREPARING THE PRINTER FOR OPERATION

RAISING THE PRINTER COVER

It is necessary to raise the Printer cover when moving the Part Form Lever, and when installing the Ribbon Cartridge. To raise the cover, press in the cover latches (Figure 2-1) and carefully raise each side of the cover evenly. The Printer motor will turn off if on, and the Print Head Carriage will return to the left margin. This action prevents printing while the cover is up.

PTL-4082

Figure 2-1. Cover Latches

PAPER REQUIRED

Standard continuous form business machine type paper punched for pin-feeding is required. Single or multiple copy paper may be used. The maximum is the original plus three copies with a maximum form set thickness of 0.015 inch (.038 cm). Figure 2-2 shows the dimensions of the paper that can be used in the TermiNet 30 Printer.

Refer to GEJ-2748 "ORDERING SUPPLIES" for approved sources of paper.

OPTIONAL THICK FORM SET PRINTER

A special TermiNet 30 Printer which accommodates 6 to 9 part forms is optionally available. The model number ends with A3 or A4 and the decal located adjacent to the Parts Form Lever indicates a 7 - part setting (for 6 or 7 part forms) and a 9 - part setting (for 8 or 9 part forms).

CAUTION

Do not use single sheets or form sets of less than 6 parts in the special thick form set TermiNet 30 Printer.

Failure to observe this caution will cause serious Printer damage and void the print head warranty.

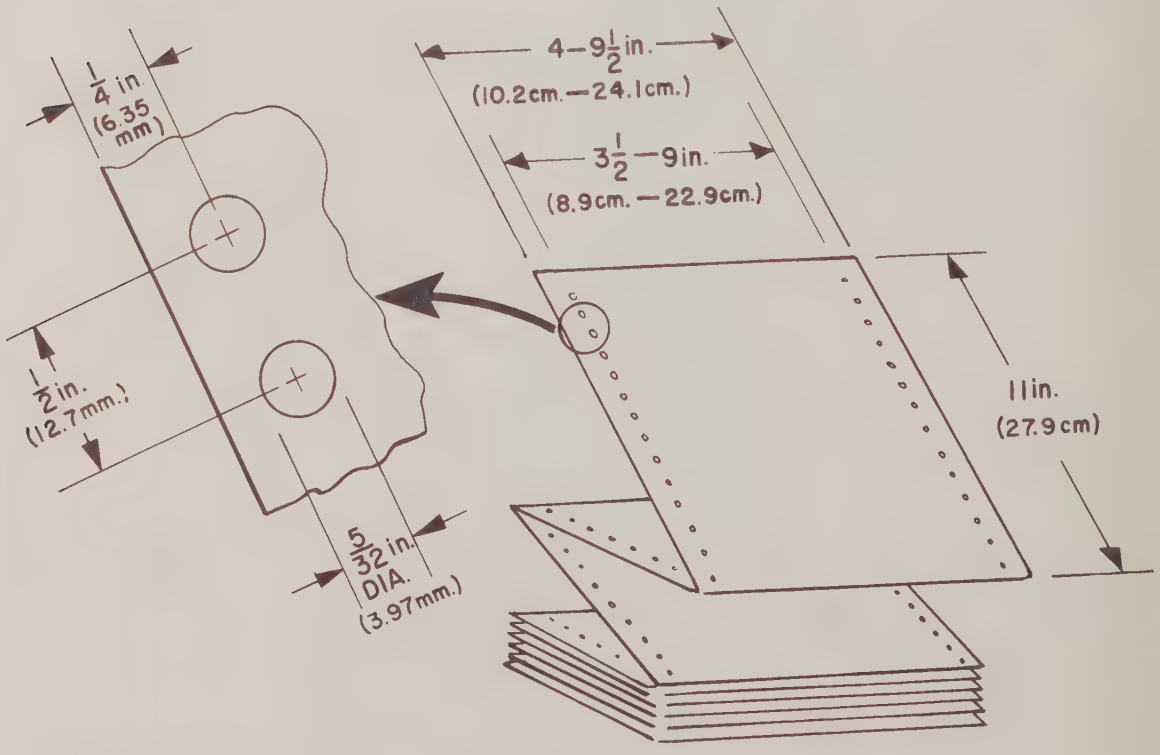


Figure 2-2. Paper Dimensions

PAPER INSTALLATION

Install paper as shown by Steps 1 through 15 in Figure 2-3.

PTL-4083

STEP 1

Place the paper behind the Printer on a flat surface so that the paper will feed up between pedestal and paper restacking shelf (optional). Make certain that side pressure or tension is not applied to paper after installation. If paper is left in its original box, make certain box is opened cleanly and does not interfere with the flow of paper. NOTE: The above illustration shows the paper installed. The paper is routed up into the Printer and out into the optional restacking shelf.

PTL-4084

STEP 2

Place the Paper Release Lever in the released position (toward rear of Printer). If the Printer motor was on, this action will turn off the motor.

PTL-4085

STEP 3

Check position of Part Form Lever. If you are using paper with 1 or 2 parts, move the Lever fully outward so that 1/2 shows. In order to move the lever, the cover must be raised.

PTL-4086

STEP 4

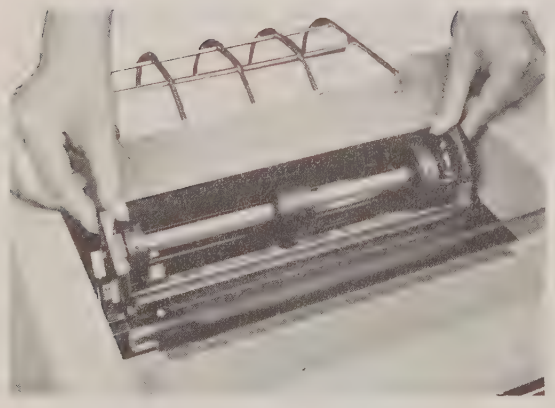
If you are using paper with 3 or 4 parts, move the Lever fully inward so that 3/4 shows.

Figure 2-3. Paper Installation (Sheet 1 of 4)

PTL-4087

STEP 5

Raise Paper Shield.



PTL-4088

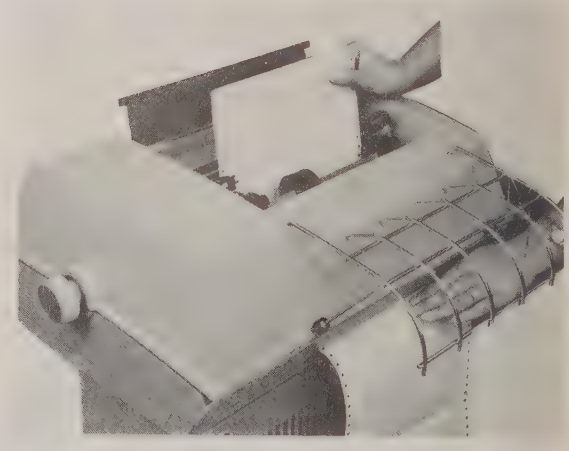
STEP 6

Raise both left and right spring-loaded Pin Wheel Covers.

PTL-4089

STEP 7

Insert paper in paper entrance slot in rear of Printer. If paper is lined, insert with lined side down.



PTL-4090

STEP 8

Push paper in slot until visible in center of Printer; then pull paper up.

Figure 2-3. Paper Installation (Sheet 2 of 4)

PTL-4091

STEP 9

Align paper with left hand Pin Wheel; and insert Pin Wheel teeth into paper. Lower Pin Wheel Cover over paper.

PTL-4092

STEP 10

If right hand Pin Wheel does not align with paper holes, squeeze together Paper Width Adjustment Lever and support arm of right hand Pin Wheel assembly; and slide assembly until Pin Wheel teeth are centered under holes in paper. It may be necessary to move the Margin Limit Lever toward the center of the Printer in order to move the Pin Wheel assembly (see Step 13).

PTL-4093

STEP 11

With Pin Wheel sprocket teeth in paper holes, lower Pin Wheel Cover.

IMPORTANT NOTE: The paper should not be under tension nor should it buckle from Pin Wheel to Pin Wheel. Either condition can cause the paper to skew off the Pin Wheels when the paper is advanced. If the paper is skewing, the problem could be that the right hand Pin Wheel was not positioned correctly.

PTL-4094

STEP 12

Position spool in center of paper width.

Figure 2-3. Paper Installation (Sheet 3 of 4)

PTL-4095

STEP 13

If not previously set, move the Margin Limit Lever toward the front of the Printer; then slide the Margin Limit assembly so that the arrow points to the desired right margin position.

PTL-4096

STEP 14

Place the Paper Release Lever in the engaged position (toward front of Printer).

PTL-4097

STEP 15

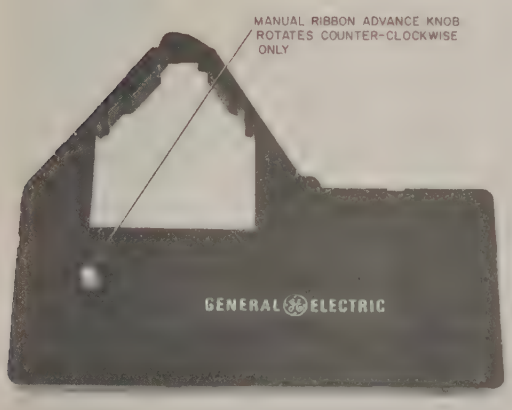
Lower Paper Shield.

Figure 2-3. Paper Installation (Sheet 4 of 4)

INK RIBBON CARTRIDGE REPLACEMENT

Replace Ink Ribbon Cartridge only with General Electric Part Number 44A411800-G01 (includes box of two cartridges). Refer to GEJ-2748 "ORDERING SUPPLIES" for approved sources of Ink Ribbon Cartridges. Figure 2-4 shows the Cartridge and the print head carriage frame that the Cartridge is fastened to.

Replace the Cartridge according to Steps 1 through 8 in Figure 2-5.



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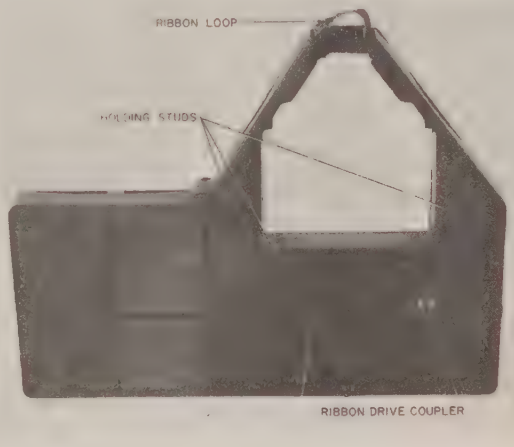
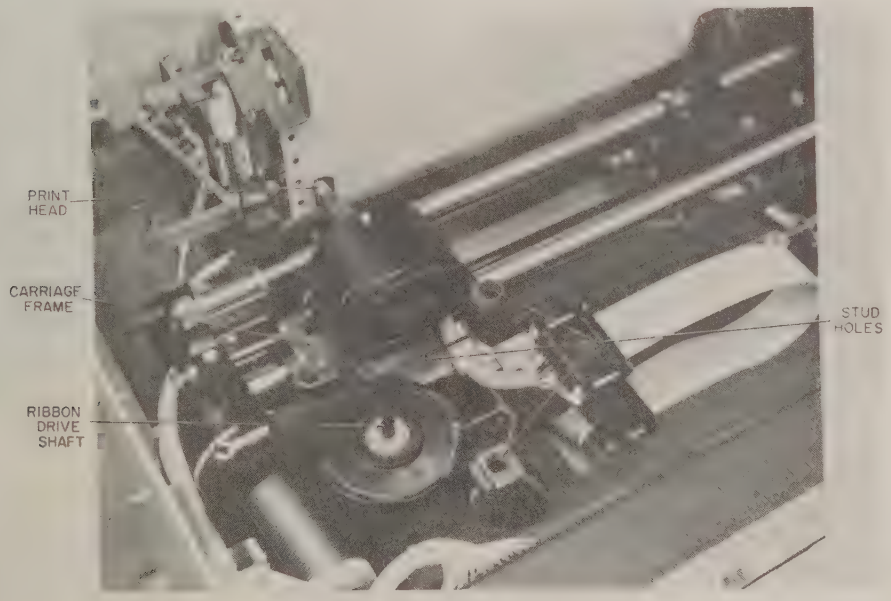
Ink Ribbon Cartridge, Top View



PTL-4099

Ink Ribbon Cartridge, Bottom View



PTL-4100

Print Head Carriage Frame

Figure 2-4. Cartridge and Print Head Carriage Frame

PTL-4101

STEP 1

Raise Printer top cover. Move the Paper Release Lever to the released position (toward the rear of Printer).

PTL-4102

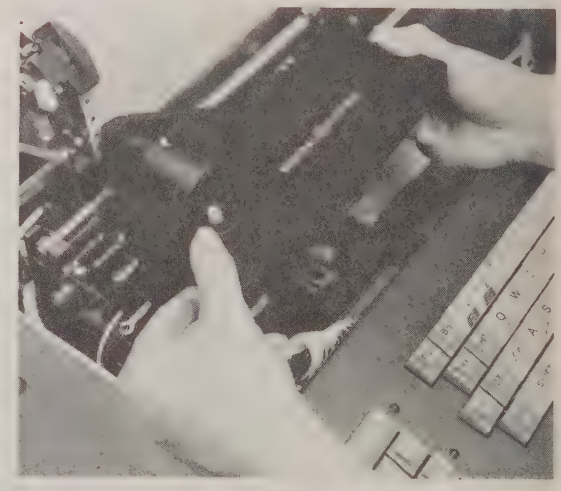
STEP 2

Lift rear of Cartridge until it unfastens, then lift Cartridge straight up until ribbon loop clears the Print Head.

PTL-4103

STEP 3

With the new replacement Cartridge, make certain a ribbon loop extends out of the Cartridge. The loop should be large enough to fit over the Print Head. The loop can be made by pulling some ribbon out of the Cartridge.

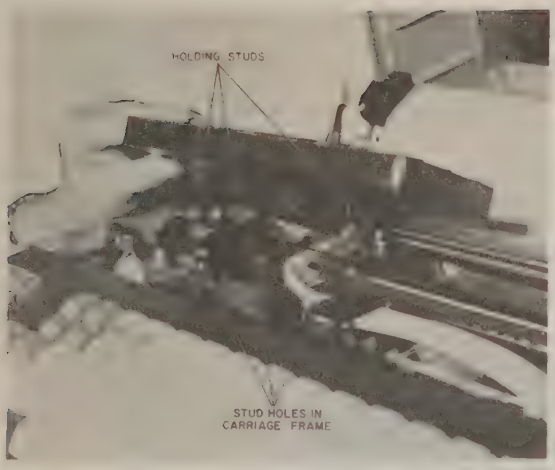


PTL-4104

STEP 4

Remove shipping support wire from right corner of new cartridge. Place ribbon loop over Print Head.

Figure 2-5. Ink Ribbon Cartridge Replacement (Sheet 1 of 2)



PTL-4105

STEP 5

Align the three Cartridge holding studs with the stud holes in the carriage frame.

PTL-4106

STEP 6

Press Cartridge straight down so that the three holding studs seat in the stud holes in the carriage frame simultaneously. If the ribbon drive shaft does not seat into the Cartridge easily, slowly turn the ribbon advance knob counterclockwise while pressing straight down on the Cartridge.

PTL-4107

STEP 7

Take up slack in ribbon loop by turning the ribbon advance knob counterclockwise.

PTL-4108

STEP 8

Move the Paper Release Lever to the engaged position (toward the front of Printer). Lower and latch the Printer top cover.

Figure 2-5. Ink Ribbon Cartridge Replacement (Sheet 2 of 2)

SECTION 3

OPERATION

SWITCHES, CONTROLS, AND INDICATORS

Figures 3-1 through 3-6 point out the locations of the switches, controls, and indicators and explain their basic functions.

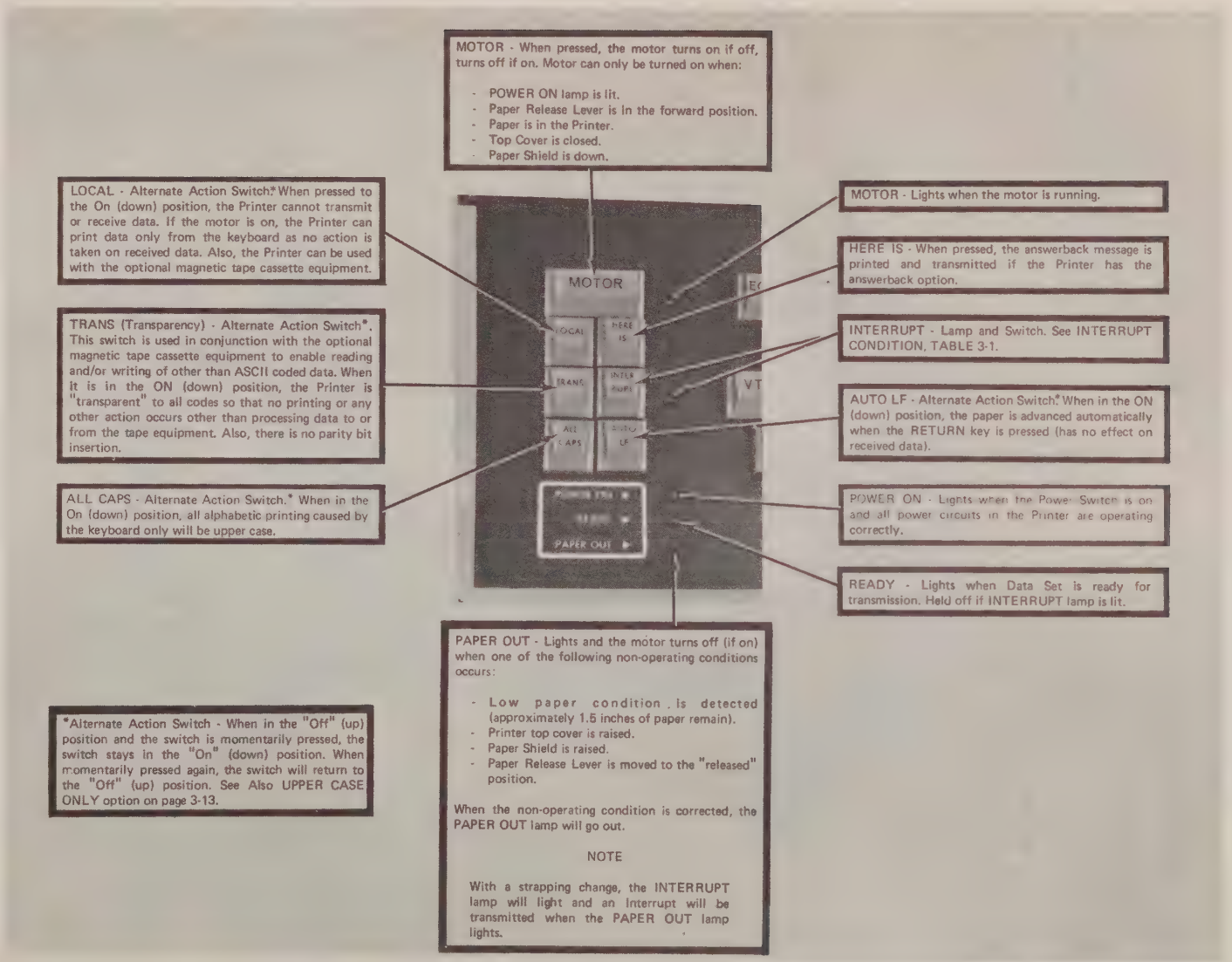
KEYBOARD OPERATIONS

The keyboard is similar to that on a standard electric typewriter, and is capable of generating all 128 ASCII characters. For descriptions of the Printer operation keys, see Figure 3-7.

POWER SWITCH - When pressed to the ON position, power is applied to the Printer, the POWER ON lamp lights, and the Printer goes to "Standby". A strapping option can be made so that when power is applied the Printer will go to "On Line" status (motor running).

PTL-4109

Figure 3-1. Power Switch


MOTOR - When pressed, the motor turns on if off, turns off if on. Motor can only be turned on when:
- POWER ON lamp is lit.
- Paper Release Lever is in the forward position.
- Paper is in the Printer.
- Top Cover is closed.
- Paper Shield is down.
LOCAL - Alternate Action Switch.* When pressed to the On (down) position, the Printer cannot transmit or receive data. If the motor is on, the Printer can print data only from the keyboard as no action is taken on received data. Also, the Printer can be used with the optional magnetic tape cassette equipment.
TRANS (Transparency) - Alternate Action Switch*. This switch is used in conjunction with the optional magnetic tape cassette equipment to enable reading and/or writing of other than ASCII coded data. When it is in the ON (down) position, the Printer is "transparent" to all codes so that no printing or any other action occurs other than processing data to or from the tape equipment. Also, there is no parity bit insertion.
ALL CAPS - Alternate Action Switch.* When in the On (down) position, all alphabetic printing caused by the keyboard only will be upper case.
*Alternate Action Switch - When in the "Off" (up) position and the switch is momentarily pressed, the switch stays in the "On" (down) position. When momentarily pressed again, the switch will return to the "Off" (up) position. See Also UPPER CASE ONLY option on page 3-13.
MOTOR
LOCAL
HERE IS
TRANS
INTER RUPT
ALL CAPS
AUTO LF
PAPER OUT
MOTOR - Lights when the motor is running.
HERE IS - When pressed, the answerback message is printed and transmitted if the Printer has the answerback option.
INTERRUPT - Lamp and Switch. See INTERRUPT CONDITION, TABLE 3-1.
AUTO LF - Alternate Action Switch.* When in the ON (down) position, the paper is advanced automatically when the RETURN key is pressed (has no effect on received data).
POWER ON - Lights when the Power Switch is on and all power circuits in the Printer are operating correctly.
READY - Lights when Data Set is ready for transmission. Held off if INTERRUPT lamp is lit.
PAPER OUT - Lights and the motor turns off (if on) when one of the following non-operating conditions occurs:
- Low paper condition is detected (approximately 1.5 inches of paper remain).
- Printer top cover is raised.
- Paper Shield is raised.
- Paper Release Lever is moved to the "released" position.
When the non-operating condition is corrected, the PAPER OUT lamp will go out.
NOTE
With a strapping change, the INTERRUPT lamp will light and an Interrupt will be transmitted when the PAPER OUT lamp lights.

PTL-4110

Figure 3-2. Control Cluster, KSR Printer

TABLE 3-1

INTERRUPT CONDITION TABLE

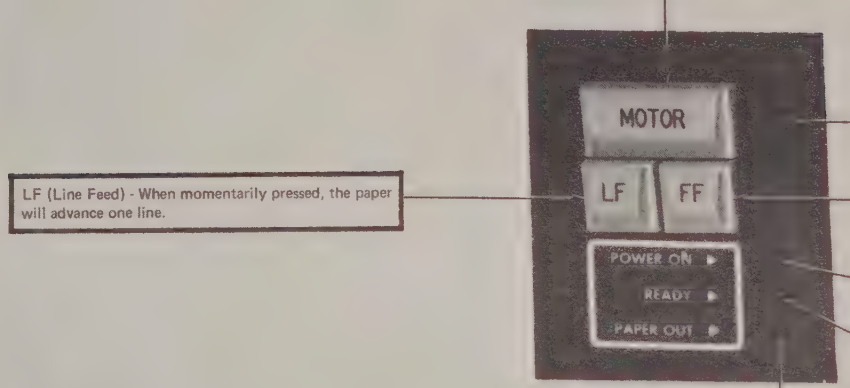
CONDITION OF INTERRUPT LAMP	RESULTS FROM PRESSING INTERRUPT SWITCH
Unlit	An "Interrupt" or "Break" signal is transmitted. INTERRUPT lamp does not light.
Lit	1. INTERRUPT lamp goes out. 2. "Interrupt" or "Break" is not transmitted. 3. Keyboard is enabled (KSR Printer). 4. READY lamp lights. (With Data Set Control Option)

CONDITION OF INTERRUPT LAMP	RESULTS FROM RECEIVING AN INTERRUPT
Unlit	1. INTERRUPT lamp lights. 2. Keyboard is inhibited (KSR Printer). 3. Optional Tape Cassette (if on) is turned off. 4. Optional Tape Cassette may then be restarted either locally or remotely. 5. Data may still be received. 6. Motor does not turn off. 7. READY lamp goes out. (With Data Set Control Option)
Lit	1. Optional Tape Cassette (if on) is turned off. 2. Optional Tape Cassette may then be restarted either locally or remotely. 3. Data may still be received. 4. Motor is not turned off. 5. READY lamp is held off.

NOTE

Depending on the strapping options selected, the Printer transmits a timed "Interrupt" signal that is 250 msec or 450 msec long, or as long as the INTERRUPT switch is pressed. The "Interrupt" signal is a continuous space on the transmitting data lead for the selected period of time.

The minimum duration of a received "Interrupt" signal must be 150 milliseconds to insure detection by the Printer.



MOTOR - When pressed, the motor turns on if off, turns off if on. Motor can only be turned on when:

- POWER ON lamp is lit.
- Paper Release Lever is in the forward position.
- Paper is in the Printer.
- Top Cover is closed.
- Paper Shield is down.

MOTOR - Lights when the motor is running.

LF (Line Feed) - When momentarily pressed, the paper will advance one line.

FF (Form Feed) - When momentarily pressed, the paper advances continuously to the beginning of the next new form.

POWER ON - Lights when the Power Switch is on and all power circuits in the Printer are operating correctly.

READY - Lights when Data Set or Internal Modem is ready for reception of data.

PAPER OUT - Lights and the motor turns off (if on) when one of the following non-operating conditions occurs:

- Low paper condition is detected (approximately 1.5 inches of paper remain).
- Printer top cover is raised.
- Paper Shield is raised.
- Paper Release Lever is moved to the "released" position.

When the non-operating condition is corrected, the PAPER OUT lamp will go out.

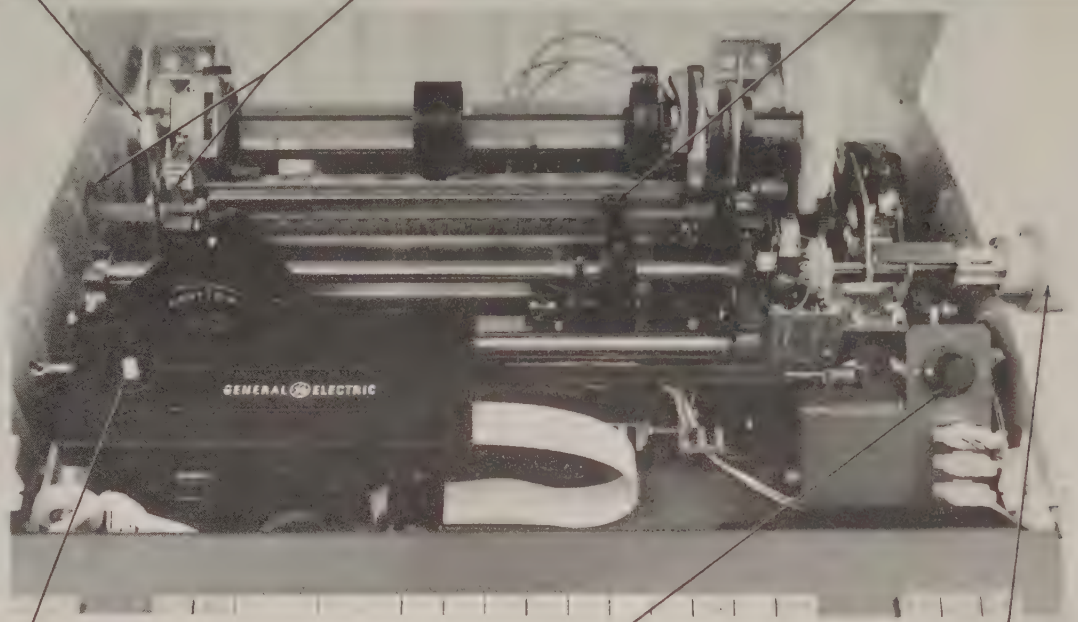
NOTE

With a strapping change, the INTERRUPT lamp will light and an Interrupt will be transmitted when the PAPER OUT lamp lights.

PAPER RELEASE LEVER - This lever has two positions; the "engaged" position toward the front of the Printer, and the "released" position toward the rear of the Printer. The "engaged" position is for normal operation. The "released" position swings back the rear section of the print frame, and turns off the Printer motor. The lever must be in the "released" position when installing the Paper, replacing the Ink Ribbon Cartridge, or moving the PART FORM lever.

PART FORM LEVER - This lever has two positions. The left position (the 1/2 is visible) is for one or two part form paper. The right position (the 3/4 is visible) is for three or four part form paper. The Paper Release Lever must be in the "released" position before the Part Form Lever may be moved.

MARGIN LIMIT LEVER - Sets the right margin position and end-of-line warning bell. To set margin, pull Margin Limit Lever toward the front of Printer and slide Lever assembly until the arrow points to the desired margin on the paper (see Figure 3-6). The arrow points to the position at which printing will stop. The warning bell will sound six positions before end of line.



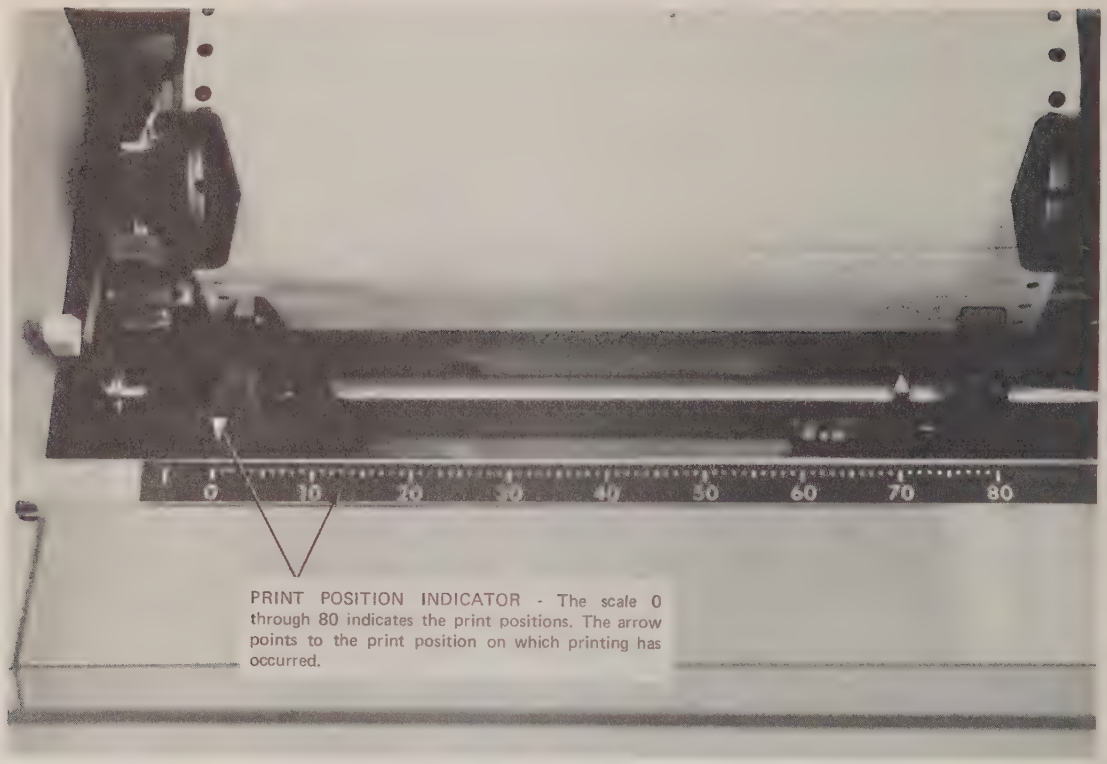
MANUAL RIBBON ADVANCE KNOB - Turning this Knob counterclockwise advances the ribbon.

RATE SWITCH - Selects 10, 20, or 30 characters per second as the printing, transmitting and receiving speed. When 120 is selected, the Printer motor turns off; the Printer can transmit and receive but not print at 120 characters per second. When going from 120 to a lower speed, the MOTOR Switch must be pressed to turn on the motor.

PAPER ADVANCE KNOB - Pressing in and turning this Knob clockwise will advance the paper.

PTL-4112

Figure 3-4. Rate Switch and Manual Controls

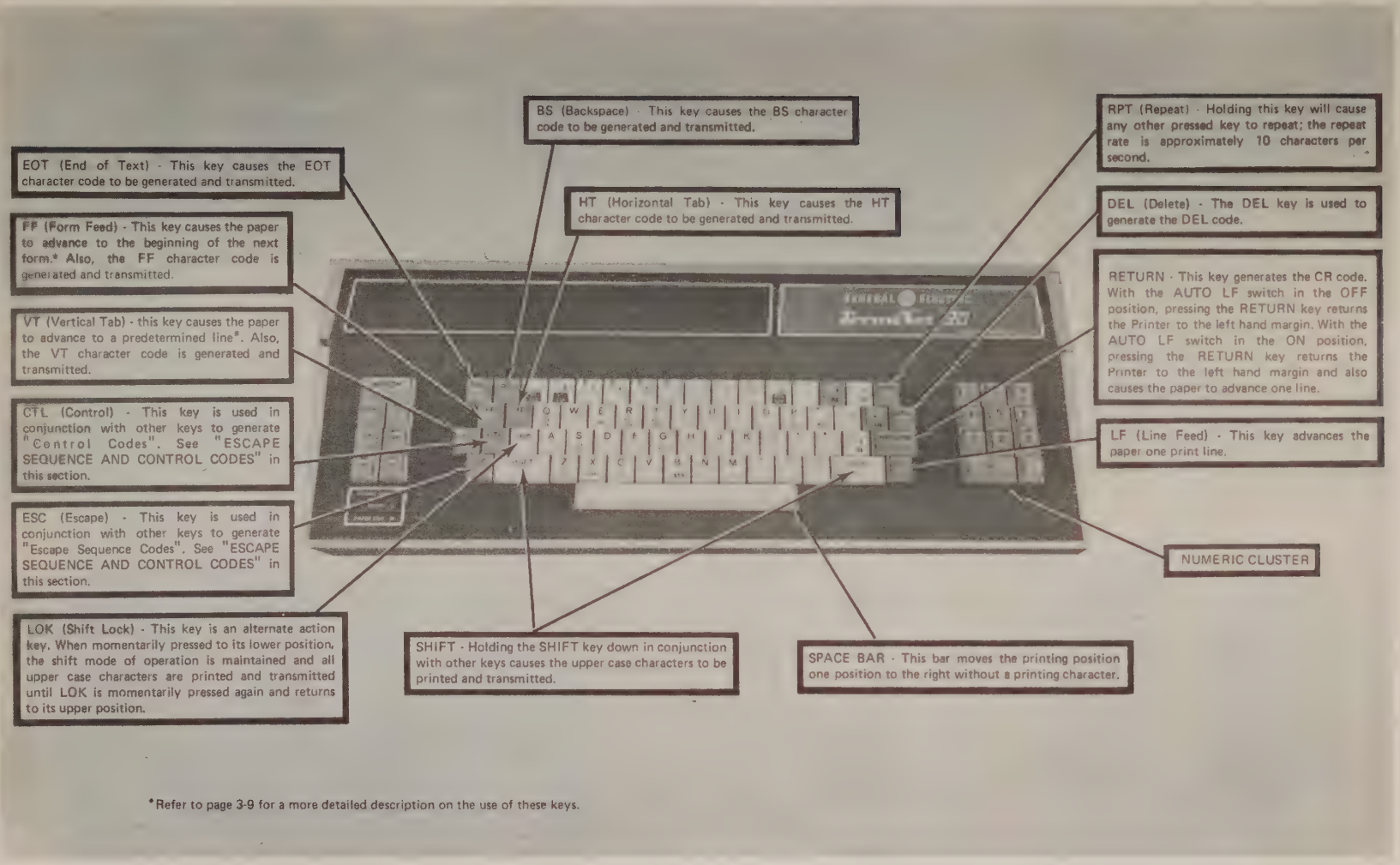


PTL-4113

Figure 3-5. Print Position Indicator

PTL-4114

Figure 3-6. Margin Limit Lever


EOT (End of Text) - This key causes the EOT character code to be generated and transmitted.
FF (Form Feed) - This key causes the paper to advance to the beginning of the next form.* Also, the FF character code is generated and transmitted.
VT (Vertical Tab) - this key causes the paper to advance to a predetermined line*. Also, the VT character code is generated and transmitted.
CTL (Control) - This key is used in conjunction with other keys to generate "Control Codes". See "ESCAPE SEQUENCE AND CONTROL CODES" in this section.
ESC (Escape) - This key is used in conjunction with other keys to generate "Escape Sequence Codes". See "ESCAPE SEQUENCE AND CONTROL CODES" in this section.
LOK (Shift Lock) - This key is an alternate action key. When momentarily pressed to its lower position, the shift mode of operation is maintained and all upper case characters are printed and transmitted until LOK is momentarily pressed again and returns to its upper position.
BS (Backspace) - This key causes the BS character code to be generated and transmitted.
HT (Horizontal Tab) - This key causes the HT character code to be generated and transmitted.
SHIFT - Holding the SHIFT key down in conjunction with other keys causes the upper case characters to be printed and transmitted.
SPACE BAR - This bar moves the printing position one position to the right without a printing character.
RPT (Repeat) - Holding this key will cause any other pressed key to repeat; the repeat rate is approximately 10 characters per second.
DEL (Delete) - The DEL key is used to generate the DEL code.
RETURN - This key generates the CR code. With the AUTO LF switch in the OFF position, pressing the RETURN key returns the Printer to the left hand margin. With the AUTO LF switch in the ON position, pressing the RETURN key returns the Printer to the left hand margin and also causes the paper to advance one line.
LF (Line Feed) - This key advances the paper one print line.
NUMERIC CLUSTER

*Refer to page 3-9 for a more detailed description on the use of these keys.

PTL-4115

Figure 3-7. Operation Keys

ESCAPE SEQUENCE AND CONTROL CODES

In the following code descriptions, the term "receipt" or "when received" refers to codes received over the data line from a remote point, but not generated at the keyboard or local magnetic tape (MSR). The term "recognition" or "when recognized" refers to codes received as well as to those generated locally.

ESCAPE SEQUENCE CODES

By momentarily pressing the ESC (Escape) key and then momentarily pressing the appropriate related key, an escape sequence code is generated. Although most of the common Escape Sequence Codes can be generated from the keyboard, the Printer only acts upon two codes if it has the optional magnetic tape equipment.

- ESC 0 - This code sequence is used to cause an optional magnetic Tape Reader to reverse one block.

- ESC DLE DEL - This code sequence is used to cause an optional magnetic Tape Reader to rewind to the beginning of the tape.

Normally, the second character of an Escape Sequence Code will not print. A strapping option will cause the Printer to disregard all Escape Sequence Codes. This allows the second character of the Escape Sequence Code to print (if it is a printing character).

CONTROL CODES

To generate a control code, press and hold the CTL (control) key, then simultaneously press the desired control function key. Release the keys. Most control function keys are identified on their front edges.

The Printer keyboard is capable of generating all ASCII control codes. The following are descriptions of those codes which cause the TermiNet 30 Printer to take some action.

CTL-B, STX - (Start of Text) - When the Line Control option is installed, local generation of this code turns the Printer to transmit and also turns ON circuit CA, Request to Send.

CTL-C, ETX (End of Text) - This code causes an action if the Printer has the Line Control option. When the Printer is in a transmit mode, local generation of ETX places it in a receive mode. When received, it places the Printer in a transmit mode.

CTL-D, EOT - (End of Transmission) - When the Data Set Control option is installed, recognition of EOT may be used to turn off the Printer motor and initiate a data set disconnect. If the Line Control option is installed, recognition of EOT may be used to either turn the transmission line around or always turn the Printer to receive. When EOT is used as a turn character, the Data Set Control option should be strapped to ignore this code.

CTL-E, ENQ - (Enquiry) - When the Answerback option is installed and the Clear to Send lead (circuit CB) is ON, receipt of this code causes the "Answerback" message to be triggered. Additionally, if the Line Control option is installed, the status of the Printer is indicated by the transmission of ACK or NAK following the "Answerback" message and turns the line around. The line control response may be used without the Answerback option.

CTL-F, ACK - (Acknowledgment) - This code causes an action only if the Printer has the Line Control option. This code recognition of ACK turns the line around. A Printer transmits ACK as a response to ENQ if the Printer is not out of paper, is not in a LOCAL mode, and has the Printer MOTOR ON.

CTL-G, BEL - (Bell or Alarm) - When recognized, this code causes a bell to ring.

CTL-P, DLE - (Data Link Escape) - When the Line Control option is installed, DLE is used in combination with the following code:

DLE EOT - When recognized, this code initiates the automatic disconnect sequence by turning the Data Terminal Ready signal (circuit CD) to the Data Set off. The Printer motor will turn off. The Data Set Control and Line Control options are required.

CTL-Q, RDR ON, DC1 (Reader On) - The Reader On code is used, when received, to turn on an optional reader device.

CTL-R, PCH ON, DC2 (Punch On) - The Punch On code is used, when received, to turn on an optional recording device.

CTL-S, RDR OFF, DC3 (Reader Off) - The Reader Off code is used, when received, to turn off an optional reading device.

CTL-T, PCH OFF, DC4 (Punch Off) - The Punch Off code is used, when received, to turn off an optional recording device.

CTL-U, NAK (Negative Acknowledgment) - This code causes an action if the Printer has the Line Control option. Receipt of a NAK turns the line around. A Printer transmits NAK on receipt of ENQ if it has a Paper Out condition or the Printer's motor is off.

VERTICAL FORMAT UNIT (VFU) (OPTION)

DESCRIPTION

The punched tape VFU (Figure 3-8) is used to feed Printer paper rapidly to a predetermined line position upon recognition of a locally or remotely generated form feed (FF) or vertical tabulation (VT) code. The punched tape VFU uses a standard one-inch-wide (2.54 cm), eight-channel paper or mylar tape with 1/10 inch (2.54 mm) pitch sprocket holes located between channels 3 and 4 (see Figure 3-9). Channel 1 is used for Form Feed and Channel 6 is used for Vertical Tab. No other channels are recognized (see Figure 3-9).

Whenever a Form Feed code is recognized by the Printer, the punched tape will rapidly advance causing the paper in the Printer to advance at the same time until the VFU tape reader sees a hole in channel 1 of the tape. At this point the punched tape will stop advancing along with the paper. Any Vertical Tabs (holes in channel 6) will be skipped over as the VFU reader is looking only at channel 1.

A recognized Vertical Tab code will cause the VFU to operate in the same manner as described above except that the VFU tape reader will look for channel 6 holes while the tape is advancing through the reader. The first hole seen in channel 6 by the VFU tape reader will cause the punched tape and Printer paper to stop advancing.

NOTE

When a Vertical Tab code is acted upon, the tape reader will also stop at a form feed hole (channel 1).

PREPARING THE VFU PUNCHED TAPE

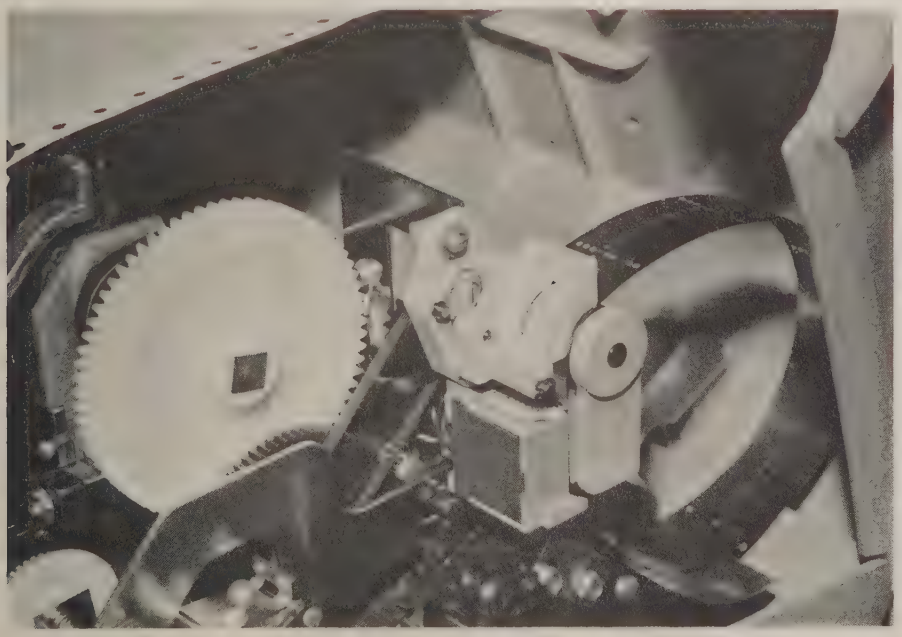
A tape 6 to 12 inches (15.2 to 30.4 cm) long is prepared by punching a hole in channel 1 to correspond with the first line on the form to be used. Holes are punched in channel 6 to correspond with selected lines on the form where vertical tabs are desired. Each sprocket hole corresponds to a line on the form.

DETERMINING THE LENGTH OF THE TAPE

Mark the length of the tape for a particular form length by referring to Table 3-2.

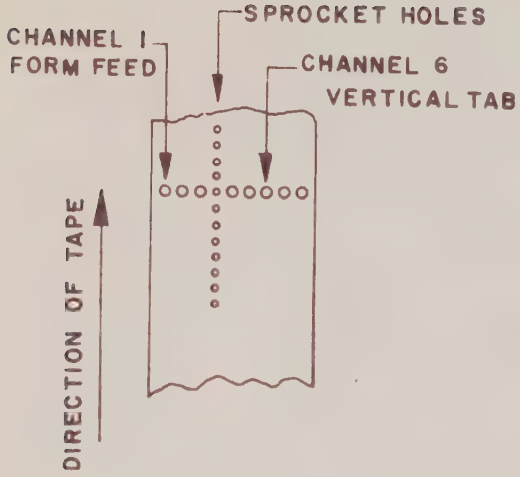
NOTE

When marking the tape length, allow one inch (2.5 cm) at each end of tape for working space. This one inch excess will be cut off after the tape is punched.



PTL-4116

Figure 3-8. Punched Tape VFU



OVT-4004

Figure 3-9. Standard, One-Inch Wide (2.54 cm) Eight-Channel Paper or Mylar Tape for use with VFU

Because the tape length cannot be less than 6 inches (15.24 cm), the VFU format on the tape for forms less than 10 inches (25.4 cm) in length will have to be repeated on the tape as many times as necessary to make the total tape length at least 6 inches (15.24 cm).

Example:

Determine the length of tape needed for use with 4 1/2 inch (11.4 cm) forms.

a. By referring to the table, it can be seen that 2.7 inches (6.9 cm) of tape is required for 4 1/2 inch (11.4 cm) form.

b. The table shows that the VFU format on the tape must be repeated three times for a 4 1/2 inch (11.4 cm) form.

c. The table shows that the total tape length must be 8.1 inches (20.6 cm). This exceeds the minimum tape length of 6 inches (15.24 cm).

TABLE 3-2

NO. OF LINE SPACES	FORM LENGTH		TAPE LENGTH PER FORM LENGTH		NO. OF REPETITIVE VFU FORMATS	TOTAL TAPE LENGTH	
	IN.	CM	IN.	CM		IN.	CM
1			0.1	0.25	60	6.0	15.2
2			0.2	0.51	30	6.0	15.2
3	0.5	1.3	0.3	0.76	20	6.0	15.2
4			0.4	1.02	15	6.0	15.2
5			0.5	1.27	12	6.0	15.2
6	1.0	2.5	0.6	1.52	10	6.0	15.2
7			0.7	1.78	9	6.3	16.0
8			0.8	2.0	8	6.4	16.3
9	1.5	3.8	0.9	2.3	7	6.3	16.0
10			1.0	2.5	6	6.0	15.2
11			1.1	2.8	6	6.6	16.8
12	2.0	5.1	1.2	3.0	5	6.0	15.2
13			1.3	3.3	5	6.5	16.5
14			1.4	3.6	5	7.0	17.8
15	2.5	6.4	1.5	3.8	4	6.0	15.2
16			1.6	4.1	4	6.4	16.3
17			1.7	4.3	4	6.8	17.3
18	3.0	7.6	1.8	4.6	4	7.2	18.3
19			1.9	4.8	4	7.6	19.3
20			2.0	5.1	3	6.0	15.2

Continued

TABLE 3-2 (continued)

NO. OF LINE SPACES	FORM LENGTH		TAPE LENGTH PER FORM LENGTH		NO. OF REPETITIVE VFU FORMATS	TOTAL TAPE LENGTH	
	IN.	CM	IN.	CM		IN.	CM
21	3.5	8.9	2.1	5.3	3	6.3	16.0
22			2.2	5.6	3	6.6	16.8
23			2.3	5.8	3	6.9	17.5
24	4.0	10.2	2.4	6.1	3	7.2	18.3
25			2.5	6.4	3	7.5	19.1
26			2.6	6.6	3	7.8	19.8
27	4.5	11.4	2.7	6.9	3	8.1	20.6
28			2.8	7.1	3	8.4	21.3
29			2.9	7.4	3	8.7	22.1
30	5.0	12.7	3.0	7.6	2	6.0	15.2
31			3.1	7.9	2	6.2	15.7
32			3.2	8.1	2	6.4	16.3
33	5.5	14.0	3.3	8.4	2	6.6	16.8
34			3.4	8.6	2	6.7	17.0
35			3.5	8.9	2	7.0	17.8
36	6.0	15.2	3.6	9.1	2	7.2	18.3
37			3.7	9.4	2	7.4	18.8
38			3.8	9.7	2	7.6	19.3
39	6.5	16.5	3.9	9.9	2	7.8	19.8
40			4.0	10.2	2	8.0	20.3
41			4.1	10.4	2	8.2	20.8
42	7.0	17.8	4.2	10.7	2	8.4	21.3
43			4.3	10.9	2	8.6	21.8
44			4.4	11.2	2	8.8	22.4
45	7.5	19.1	4.5	11.4	2	9.0	22.9
46			4.6	11.7	2	9.2	23.4
47			4.7	11.9	2	9.4	23.9
48	8.0	20.3	4.8	12.2	2	9.6	24.4
49			4.9	12.4	2	9.8	24.9
50			5.0	12.7	2	10.0	25.4
51	8.5	21.6	5.1	13.0	2	10.2	25.9
52			5.2	13.2	2	10.4	26.4
53			5.3	13.5	2	10.6	26.9
54	9.0	22.9	5.4	13.7	2	10.8	27.4
55			5.5	14.0	2	11.0	27.9
56			5.6	14.2	2	11.2	28.4
57	9.5	24.1	5.7	14.5	2	11.4	29.0
58			5.8	14.7	2	11.6	29.5
59			5.9	15.0	2	11.8	30.0
60	10.0	25.4	6.0	15.2	1	6.0	15.2
61			6.1	15.5	1	6.1	15.5
62			6.2	15.7	1	6.2	15.7
63	10.5	26.7	6.3	16.0	1	6.3	16.0
64			6.4	16.3	1	6.4	16.3
65			6.5	16.5	1	6.5	16.5
66	11.0	27.9	6.6	16.8	1	6.6	16.8
67			6.7	17.0	1	6.7	17.0
68			6.8	17.3	1	6.8	17.3
69	11.5	29.2	6.9	17.5	1	6.9	17.5

Continued

TABLE 3-2 (continued)

NO. OF LINE SPACES	FORM LENGTH		TAPE LENGTH PER FORM LENGTH		NO. OF REPETITIVE VFU FORMATS	TOTAL TAPE LENGTH	
	IN.	CM	IN.	CM		IN.	CM
70			7.0	17.8	1	7.0	17.8
71			7.1	18.0	1	7.1	18.0
72	12.0	30.5	7.2	18.3	1	7.2	18.3
73			7.3	18.5	1	7.3	18.5
74			7.4	18.8	1	7.4	18.8
75	12.5	31.8	7.5	19.1	1	7.5	19.1
76			7.6	19.3	1	7.6	19.3
77			7.7	19.6	1	7.7	19.6
78	13.0	33.0	7.8	19.8	1	7.8	19.8
79			7.9	20.1	1	7.9	20.1
80			8.0	20.3	1	8.0	20.3
81	13.5	34.3	8.1	20.6	1	8.1	20.6
82			8.2	20.8	1	8.2	20.8
83			8.3	21.1	1	8.3	21.1
84	14.0	35.6	8.4	21.3	1	8.4	21.3

The total tape length should not exceed 12 inches (30.48 cm).

PUNCHING THE TAPE

Place tape in tape punch and punch the required FF and VT holes. Figure 3-10 shows an example of preparing a tape for a 66-line, 11-inch (27.9 cm) form.

NOTE

Remember that the distance between sprocket holes equals one line space on the form.

SPLICING THE TAPE

Cut the one inch excess from each end of the tape so that the tape is the proper length. Splice the ends of the tape with an opaque splicing tab. Mark arrow on tape for direction of tape advance.

INSTALLING THE FORM

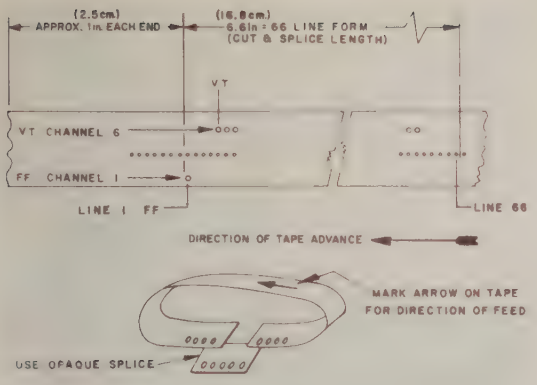
1. Press FF key (pushbutton switch on SR Printers). The tape will advance until the first FF hole is read.

2. Insert form into Printer. Position form so that first line on form is in position for printing. The Printer is now ready for operation using the VFU.

AUTOMATIC ANSWERBACK (OPTION)

When the HERE IS pushbutton switch is pressed or a control code ENQ is received, an Answerback message is printed and transmitted. Also, when the Printer is called, the Printer will automatically print (if the motor is on) and transmit its answerback message. This transmission is delayed 200 milliseconds after the CB circuit (Clear to Send) is turned ON by the data set to allow the Printer motor to come up to speed. A strapping option will disable automatic answerback feature if desired. The answerback message can be up to 20 characters and can be changed by your serviceman.

Automatic Answerback will optionally enable the transmission of ACK or NAK at the end of the "Answerback" message and turn the line to receive if the Line Control and Data Set Control options are installed. For use only on switched networks with data sets that are wired for automatic answering.



OVT-4007

Figure 3-10. Example for Preparing Tape for 66-Line, 11-inch (27.9 cm) Form Using a Punch and Splicer

PARITY ERROR DETECTION

Parity error detection is a method in which the validity of transmitted and received data can be checked. If incorrect parity is detected, the symbol □ (5 x 5 matrix print out) will be printed. A strapping option will cause the Printer to check for a parity error in received data only.

EXCESS DATA

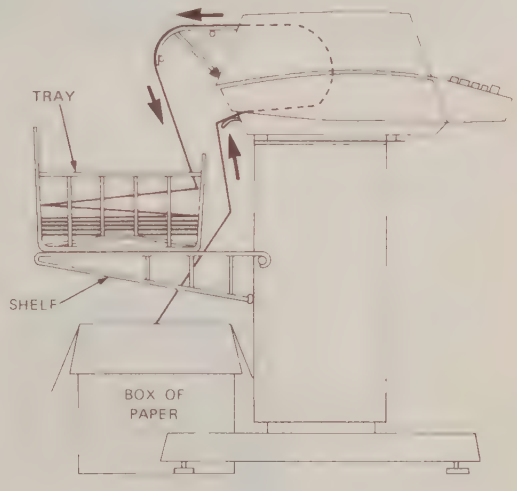
If the data being printed exceeds the right margin, the symbol □ (5 x 5 matrix print out) will be printed in the next print position following the right margin (make certain that the Margin Limit Lever is not set too far to the left). This does not apply to data from the keyboard. If you exceed the right margin from the keyboard, nothing will print.

UPPER CASE ONLY (OPTION)

Local printout of upper case only characters is available as an option. TermiNet 30 Printers equipped with this option still generate lower case data for transmission to a remote Printer, Magnetic Tape, etc. In other words, the ALL CAPS alternate action switch is still operative for remote locations although the local Printer does not have lower case print fingers.

PAPER SHELF AND TRAY (OPTION)

An optional wire frame shelf and separate wire frame tray (Figure 3-11) can be used in place of the optional sheet metal paper restacking shelf shown in Figures 1-1 and Figure 2-3, Step 1. The purpose of these options is to collect and stack fanfold paper exiting from the rear of the Printer.



PTL-6001

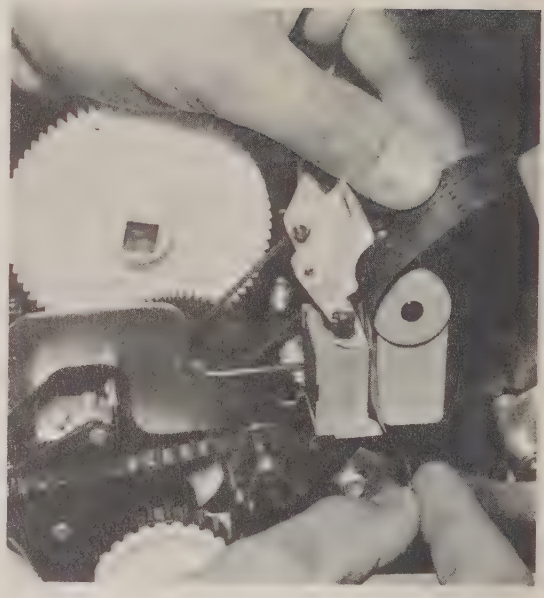
Figure 3-11. TermiNet 30 Printer With Optional Paper Shelf and Tray.

INSTALLING THE VFU PUNCHED TAPE (Steps 1, 2, and 3)

PTL-4117

STEP 1

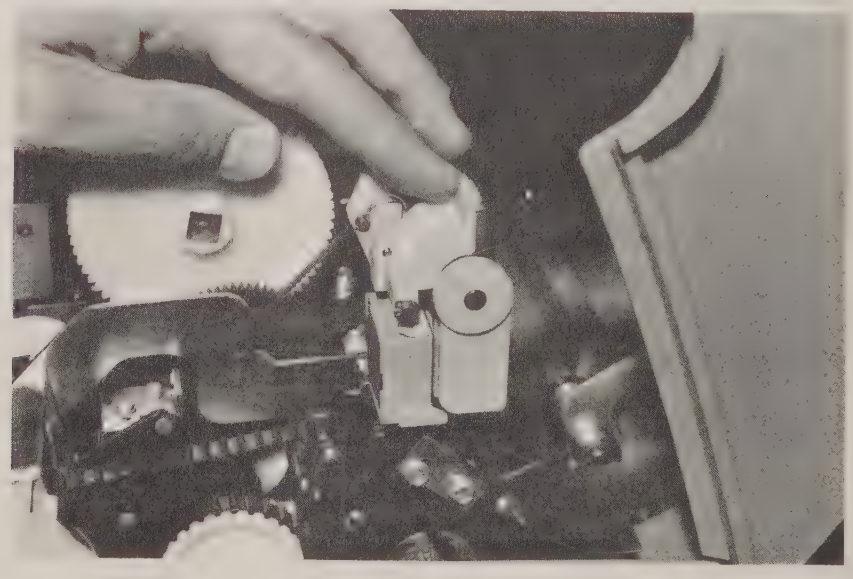
Raise Printer cover. Lift tape hold-down cover.



PTL-4118

STEP 2

Slide tape into tape reader; and position sprocket holes over sprocket teeth.



PTL-4119

STEP 3 Lower tape hold-down cover; and make certain that sprocket teeth engage tape sprocket holes. Close Printer Cover.

Figure 3-12. Installing the VFU Punched Tape

SECTION 4

TermiNet PRINTER OPERATING CHARACTERISTICS

The purpose of this section is to provide the operator and application specialist with detailed characteristics of the TermiNet 30 Printer to assist in implementing communications between the TermiNet 30 Printer and other printers and computer systems. Because this section is technical in nature, the information is primarily for the application specialist.

DATA TRANSMISSION AND RECEPTION

The standard Printer is an asynchronous transmitting or receiving device. All transmitting or receiving between the standard Printer and any other device is carried on in serial form.

INTERFACE

The electrical interface between a standard Printer and a communications network is in accordance with RS-232C. The Printer can be interfaced in various ways if the interface specifications are met.

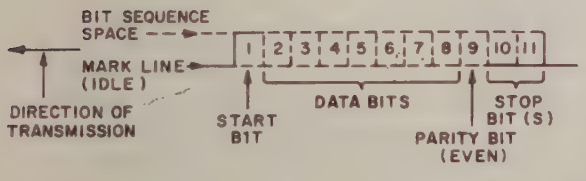
SPEED

The Printer transmits, receives, and prints at 10, 20, or 30 characters per second. It can transmit and receive (but not print) at 120 characters per second.

The corresponding transmission rates for these various character rates are 110 (109.95), 200, 300, and 1200 baud.

CHARACTER COMPOSITION

Each character is composed of one start bit, seven data bits, a parity bit, and one stop bit. At a 110 baud rate, two stop bits are used. (See Figure 4-1.) Choice of strapping options can cause either one or two stop bits to be generated at 20, 30 and 120 characters per second.



MSC-4012

Figure 4-1. Typical Character Bit Pattern

ASCII CODE

The TermiNet Printers use the American Standard Code for Information Interchange (ASCII) as shown in Figure 4-2. For ease of reference, a rearrangement of this chart to octal form is shown in Figure 4-3. Each of the 128 ASCII codes can be transmitted by pressing one or a combination of two keys on the Printer.

b7 b6 b5 b4	Column 0	1	2	3	4	5	6	7
0 0 0 0	0 NUL	DLE	SP	0	@	P	`	p
0 0 0 1	1 SOH	DC1	!	1	A	Q	a	q
0 0 1 0	2 STX	DC2	"	2	B	R	b	r
0 0 1 1	3 ETX	DC3	#	3	C	S	c	s
0 1 0 0	4 EOT	DC4	$	4	D	T	d	t
0 1 0 1	5 ENQ	NAK	%	5	E	U	e	u
0 1 1 0	6 ACK	SYN	&	6	F	V	f	v
0 1 1 1	7 BEL	ETB	'	7	G	W	g	w
1 0 0 0	8 BS	CAN	(	8	H	X	h	x
1 0 0 1	9 HT	EM	)	9	I	Y	i	y
1 0 1 0	10 LF	SUB	*	:	J	Z	j	z
1 0 1 1	11 VT	ESC	+	;	K	[	k	{
1 1 0 0	12 FF	FS	,	<	L	\	l	|
1 1 0 1	13 CR	GS	-	=	M	]	m	}
1 1 1 0	14 SO	RS	.	>	N	^	n	~
1 1 1 1	15 SI	US	/	?	O	_	o	DEL

MSC-3002

Figure 4-2. ASCII Code Chart

1ST AND 2ND OCTAL DIGITS \ 3RD OCTAL DIGIT	0	1	2	3	4	5	6	7
00	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL
01	BS	HT	LF	VT	FF	CR	SO	SI
02	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB
03	CAN	EM	SUB	ESC	FS	GS	RS	US
04	SP	!	"	#	$	%	&	'
05	(	)	*	+	,	-	.	/
06	0	1	2	3	4	5	6	7
07	8	9	:	;	<	=	>	?
10	@	A	B	C	D	E	F	G
11	H	I	J	K	L	M	N	O
12	P	Q	R	S	T	U	V	W
13	X	Y	Z	[	\	]	^	_
14	`	a	b	c	d	e	f	g
15	h	i	j	k	l	m	n	o
16	p	q	r	s	t	u	v	w
17	x	y	z	{	|	}	~	DEL

MSC-4012

Figure 4-3. Octal Form of ASCII Code Chart

TermiNet CHARACTER CODES

The following tabulation shows the ASCII codes in numeric order, the corresponding ASCII character, and the TermiNet keys pressed to generate the codes. The TermiNet KEY/S columns apply to both the ANSI and ECMA Keyboards except where identified as ANSI or ECMA only.

N(10)	N(8)	N(2)	CHARACTER	TermiNet KEY/S
0	000	0000000	NUL	CTL @
1	001	0000001	SOH	CTL A
2	002	0000010	STX	CTL B
3	003	0000011	ETX	CTL C
4	004	0000100	EOT	CTL D & EOT
5	005	0000101	ENQ	CTL E
6	006	0000110	ACK	CTL F
7	007	0000111	BEL	CTL G
8	010	0001000	BS	BS
9	011	0001001	HT	HT
10	012	0001010	LF	LF
11	013	0001011	VT	VT
12	014	0001100	FF	FF
13	015	0001101	CR	RETURN
14	016	0001110	SO	CTL N
15	017	0001111	SI	CTL O
16	020	0010000	DLE	CTL P
17	021	0010001	DC1	CTL Q (RDR ON)
18	022	0010010	DC2	CTL R (PCH ON)
19	023	0010011	DC3	CTL S (RDR OFF)
20	024	0010100	DC4	CTL T (PCH OFF)
21	025	0010101	NAK	CTL U
22	026	0010110	SYN	CTL V
23	027	0010111	ETB	CTL W
24	030	0011000	CAN	CTL X
25	031	0011001	EM	CTL Y
26	032	0011010	SUB	CTL Z
27	033	0011011	ESC	ANSI - ESC & CTL [ECMA - ESC & CTL { (opening brace)
28	034	0011100	FS	ANSI - CTL \ ECMA - CTL | (vertical line)
29	035	0011101	GS	ANSI - CTL] ECMA - CTL } (closing brace)
30	036	0011110	RS	CTL ↑
31	037	0011111	US	CTL ←
32	040	0100000	SP	(Space Bar)
33	041	0100001	!	Shift 1
34	042	0100010	" (quotation mark)	Shift 2
35	043	0100011	#	Shift 3
36	044	0100100	$	Shift 4
37	045	0100101	%	Shift 5
38	046	0100110	&	Shift 6
39	047	0100111	' (apostrophe)	Shift 7
40	050	0101000	(	Shift 8
41	051	0101001	)	Shift 9
42	052	0101010	*	Shift :
43	053	0101011	+	Shift ;
44	054	0101100	, (comma)	,
45	055	0101101	-	-
46	056	0101110	.	.
47	057	0101111	/	/
48	060	0110000	0	0
49	061	0110001	1	1
50	062	0110010	2	2
51	063	0110011	3	3
52	064	0110100	4	4
53	065	0110101	5	5
54	066	0110110	6	6
55	067	0110111	7	7
56	070	0111000	8	8
57	071	0111001	9	9
58	072	0111010	:	:
59	073	0111011	;	;
60	074	0111100	<	Shift ,
61	075	0111101	=	Shift -
62	076	0111110	>	Shift .
63	077	0111111	?	Shift /

N(10)	N(8)	N(2)	CHARACTER	TermiNet KEY/S
64	100	1000000	@	@
65	101	1000001	A	Shift A
66	102	1000010	B	Shift B
67	103	1000011	C	Shift C
68	104	1000100	D	Shift D
69	105	1000101	E	Shift E
70	106	1000110	F	Shift F
71	107	1000111	G	Shift G
72	110	1001000	H	Shift H
73	111	1001001	I	Shift I
74	112	1001010	J	Shift J
75	113	1001011	K	Shift K
76	114	1001100	L	Shift L
77	115	1001101	M	Shift M
78	116	1001110	N	Shift N
79	117	1001111	O	Shift O
80	120	1010000	P	Shift P
81	121	1010001	Q	Shift Q
82	122	1010010	R	Shift R
83	123	1010011	S	Shift S
84	124	1010100	T	Shift T
85	125	1010101	U	Shift U
86	126	1010110	V	Shift V
87	127	1010111	W	Shift W
88	130	1011000	X	Shift X
89	131	1011001	Y	Shift Y
90	132	1011010	Z	Shift Z
91	133	1011011	[	ANSI - [ECMA - Shift { (opening brace)
92	134	1011100	\	ANSI - \ ECMA - Shift | (vertical line)
93	135	1011101	]	ANSI -] ECMA - Shift } (closing brace)
94	136	1011110	↑	↑
95	137	1011111	←	←
96	140	1100000	` (grave accent)	Shift @
97	141	1100001	a	A
98	142	1100010	b	B
99	143	1100011	c	C
100	144	1100100	d	D
101	145	1100101	e	E
102	146	1100110	f	F
103	147	1100111	g	G
104	150	1101000	h	H
105	151	1101001	i	I
106	152	1101010	j	J
107	153	1101011	k	K
108	154	1101100	l	L
109	155	1101101	m	M
110	156	1101110	n	N
111	157	1101111	o	O
112	160	1110000	p	P
113	161	1110001	q	Q
114	162	1110010	r	R
115	163	1110011	s	S
116	164	1110100	t	T
117	165	1110101	u	U
118	166	1110110	v	V
119	167	1110111	w	W
120	170	1111000	x	X
121	171	1111001	y	Y
122	172	1111010	z	Z
123	173	1111011	{(opening brace)	ANSI - Shift [ECMA - { (opening brace)
124	174	1111100	|(vertical line)	ANSI - Shift \ ECMA - | (vertical line)
125	175	1111101	}(closing brace)	ANSI - Shift] ECMA - } (closing brace)
126	176	1111110	~(tilde)	Shift ↑
127	177	1111111	DEL	DEL

SECTION 5

FILL CHARACTERS

Because certain non-printing operations require a finite amount of time, data being transmitted or printed locally must be delayed at the proper time so that it will not be lost. These time delays can be provided by using fill characters. In general, a "fill" character can be defined as any character in the ASCII code that does not cause a Printer action but takes time to process. For example, certain control codes and delete.

LOCAL OPERATION

No fill characters are required for local operation.

HALF DUPLEX AND FULL DUPLEX OPERATION

When transmitting in half duplex operation and printing, no fills are required for the local TermiNet 30 Printer except for vertical tab and form feed operations. However, fill characters may have to be written on tape to satisfy the requirements of the remote receiving device. Likewise, the remote transmitting device must satisfy the fill character requirements of the local (receiving) TermiNet 30 Printer.

When transmitting in full duplex operation, only the fill character requirements of the remote receiving device must be satisfied. Likewise, the remote transmitting device must satisfy the fill character requirements of the local (receiving) TermiNet 30 Printer.

When the receiving device is a TermiNet 30 Printer, use the following chart and examples for fill character requirements. When the receiving device is a TermiNet 300 or 1200 Printer, refer to the TermiNet 300 and 1200 Printer Operator's Manual (GEK-36150) for fill character requirements. For other Printers or devices, refer to related publications for fill character requirements.

Before the third quarter of 1976, TermiNet 30 Printers were shipped from the factory in half-duplex configuration (unless otherwise specified by customer). Field changes of these Printers from half- to full-duplex (or vice versa) is effected by removing (or adding) a wire strap. This must be done by a qualified serviceman. Since the third quarter of 1976, TermiNet 30 Printers have been equipped with a Half/Full Duplex switch in the area of the rate switch to enable the operator to change configuration as desired.

TRANSPARENCY

No fill characters are required for the transparency mode.

TermiNet 30 PRINTER FILL CHARACTER REQUIREMENTS

The following chart summarizes the time interval and "fill" character requirements for the TermiNet 30 Printer. The following text gives examples of how "fill" characters are used. In these examples the following symbols will be used.

C - Carriage Return

F - Form Feed

L - Line Feed

V - Vertical Tabulation

- Fill Character

TIME DELAY AND FILL CHARACTER CHART
FOR TermiNet 30 PRINTERS

FUNCTION	10 CPS		20 CPS		30 CPS		
	FILLS	DELAY TIME MSEC	FILLS	DELAY TIME MSEC	FILLS	DELAY TIME MSEC	PLACEMENT OF DELAY OR FILL CHARACTERS
Normal Single CR and LF Code Sequence*	1	73	3	213	6	260	After LF Code, Before Next Character.
CR Only	2	176	4	316	7	363	After CR Code.
VT or FF	$\frac{\#\text{ Lines}}{5}$	20 x # Lines	$\frac{\#\text{ Lines}}{2.5}$	56 + 20 x # Lines	$\frac{\#\text{ Lines}}{1.66}$	106 + 20 x # Lines	After VT or FF Code, Before Next Character.
Automatic Motor On to First Character with Data Set Control Option Using CC, CB, or CF**	CC 0 CB 0 CF 1	CC 0 CB 0 CF 100	CC 0 CB 0 CF 2	CC 0 CB 0 CF 100	CC 0 CB 0 CF 3	CC 0 CB 0 CF 100	
Last Character to Motor Off with Data Set Control Option	3	244	3	244	3	244	Between Last Character and Motor OFF.
Beginning of Line Current to First Character with Current Interface Option***	1	0	1	0	1	0	Between Beginning of Current and Transmission of First Character

NOTE: Because of internal buffering logic, delay intervals do not necessarily equal fill character time.

*Fills or Delay Time may follow either CR or LF.

**CC is recommended with 103A type data set, including the internal originate/answer automatic answer modem, on switched network applications. It is also recommended in non-modem applications where the interface is controlled directly. CB is recommended with the internal originate only modem, which presents a detected carrier signal (CF) onto the CB lead only. Acoustic couplers will generally provide the same arrangement. This is typically a switched network application. CF is recommended with 103F type data sets, including the internal originate/answer private line modem. Automatic motor control cannot be used with 1200 baud modems or data sets, as the Printer is not designed to operate at speeds higher than 30 characters/second.

***Fill character required for synchronizing.

NOTE

All examples are for the 300 Baud Rate. Note that the text used in the examples also provides additional explanation.

NORMAL SINGLE CARRIAGE RETURN AND LINEFEED SEQUENCE

Example One:

Line 1: The TermiNet 30 Data CommunicationsCL###### (L + 6 FILLS = 7 FILLS)

Line 2: Printer Operates at 30 CharactersCL######

Line 3: Per Second.CL

LINEFEED AND CARRIAGE RETURN SEQUENCE

Example Two:

Line 1: When the Normal Carriage Return and LinefeedLC####### (7 FILLS)

Line 2: Code Sequence Is ReversedLC#######

Line 3: One Additional Fill Character Is RequiredLC

CONSECUTIVE LINEFEEDS

Example Three:

Line 1: To Produce One Printing Line FollowedCL####LL (3L + 4 FILLS = 7 FILLS)

Line 2:

Line 3:

Line 4: By Two Blank Lines Use Fills After The FirstCL######

Line 5: Carriage Return And Linefeed Sequence OnlyCL

VERTICAL TABULATION OR FORM FEED

Example Four: Five Lines

Line 1: To Vertical Tabulate or Form Feed Five LinesCV###### (V + 6 FILLS = 7 FILLS)

Line 2:

Line 3: (Since the Carriage Return code needs seven fills, the Vertical Tab code can be used as a fill. The vertical tabulation can occur and be completed during three fills (5 ÷ 1.66 = 3.0) of the seven-fill delay interval required by the carriage return.)

Line 4:

Line 5:

Line 6: Only Three Fills are RequiredCL

VERTICAL TABULATION AND FORM FEED

Example Five: Twenty Lines Vertical Tabulation

Line 1: To Vertical Tab or Form Feed TwentyCV########### (12 FILLS)

(Since the VT needs 12 fills, (20 ÷ 1.66 = 12) the carriage return (i.e., seven fills) will be completed before the vertical tab is completed.

Line 21: Lines, Twelve Fills Are RequiredCL

CARRIAGE RETURN AND LINEFEED WITH VERTICAL TABULATION OR FORM FEED

Example Six: Line Feed Plus Five Lines Vertical Tabulation

Line 1: Combine Example One and Example FourCLV#####. (LV + 5 FILLS = 7 FILLS)

Line 2:

Line 3: (The carriage return requires seven fills, the LF and VT codes can be used as two fills. The vertical tabulation requires three fills and can

Line 4: be completed during the same delay interval. 5 lines ÷ 1.66 = 3 fills)

Line 5:

Line 6:

Line 7: Again Only Three Fills Are Required For the TabulationCL

MOTOR OFF WITH DATA SET CONTROL OPTION

Example Seven:

Line 1: To Allow The Last Character To Be PrintedCL######

Line 2: Before Motor Off Insert Three Fills After That Character### (3 FILLS AT END)

(Assume Motor Off After "###")

MOTOR ON WITH CURRENT INTERFACE OPTION

Example Eight:

Line 1: #Insert One Fill CharacterCL###### (1 FILL AT BEGINNING)

Line 2: Between Current beginning and First CharacterCL

PART II

TermiNet 30 Printer

Magnetic Tape Accessory (MTA)

Operator's Manual

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SECTION 1

MTA INTRODUCTION

GENERAL

The TermiNet Magnetic Tape Accessory (MTA) is a single or dual cassette device housed in a bridge assembly that is an integral part of the TermiNet 30 Printer (Figures 1-1 and 1-2).

All the operator control indicators are on the face of the bridge just above the Printer. This allows the operator to have convenient access to all switches and indicators for the Printer and MTA. There is also an optional foot switch which enhances certain operating procedures.

In general, the single cassette unit allows an operator to enter data while printing, and edit data on a cassette tape; the data can be from the keyboard or received data from "on-line" operation. Data can be read from a cassette, printed, and transmitted "on-line" to another device.

MTA-5001

Figure 1-1. Single Cassette Unit

The dual cassette unit has the same capabilities as the single cassette unit plus many more. For example, with a dual cassette unit, an operator can transfer data from one tape to another while correcting or merging new information from the keyboard, thereby creating a new updated tape. Duplicate tapes can also be made very quickly.

This publication pertains to operation of the MTA when installed on the TermiNet 30 Printer. For information on operating the TermiNet 30 Printer, refer to the Operator's Manual, GEK-36115.

The dual cassette unit (as shipped) is strapped to emulate a paper punch and reader when responding to the appropriate received control codes. The left unit is strapped as read only; and the right unit is strapped as write only. This strapping does not affect the use of the control switches for operator selection of the read and write units.

MTA-5002

Figure 1-2. Dual Cassette Unit

GENERAL OPERATING CHARACTERISTICS

CASSETTE TYPE

- ANSI compatible 2.5" x 4" twin hub coplaner digital cassette loaded with 300 feet of magnetic tape. (Refer to GEJ-2748 "Ordering Supplies" for Approved Sources of Cassettes.)

STORAGE CAPACITY

- 100,000 characters.

INTERCHANGEABILITY OF CASSETTES

- Complete, between any MTA.

EOT/BOT SENSING

- Automatically sensed.

FAST FORWARD/REWIND SPEED

- 300 feet in 30 seconds or less.

WRITE FORMAT

- 88 character blocks separated by inter-block gaps that are generated automatically.

WRITE SPEED

- 10, 20, 30 or 120 characters per second. Controlled by Printer RATE switch.

READ

- Reads 88 character blocks at a continuous rate or one at a time.
- Allows the Printer to print and/or transmit one block, one line, or one character at a time, or print and/or transmit at a continuous rate.

READ SPEED

- 10, 20, 30 or 120 characters per second. Controlled by Printer RATE switch. (TermiNet 30 Printer does not print at 120 characters per second.)

NOTE

The Read Speed is not dependent on the Write Speed. Regardless what speed data was written on tape, the Read Speed can be 10, 20, 30 or 120 characters per second.

SEARCH CAPABILITY

- Stops at inter-block gap following data block in both forward and reverse directions.
- Searches in a forward direction for one of five switch selectable ASCII codes. Stops at inter-block gap after block containing the code.

BLOCK REPLACEMENT (Single and Dual Cassette)

- In an edit operation, a single block can be replaced.

ELECTRICAL SPECIFICATIONS

All power for the MTA is furnished by the TermiNet 30 MSR power supply, which is located below the Printer logic rack, located in the pedestal.

Standard

117 ±10% VAC, Single Phase

or

100/117/200/220/240 ±10% VAC, Single Phase

Frequency

60 ±1 Hz
50 ±1 Hz

MSR power consumption at 117 VAC, 60 Hz is:

Motor Off Lock Mode	50 Watts
Printing 30 cps	
1 MTA-Write, 1 MTA-Erase	188 Watts
Printing 30 cps both MTA-Erase	205 Watts

ENVIRONMENTAL SPECIFICATIONS

The TermiNet 30 MSR Printer with its various options is suited for use in non-airconditioned factory and office environments with the following characteristics:

TEMPERATURE

Operating:	50°F (10°C) to 90°F (32°C) Standard Cassette
Storage:	-20°F (-29°C) to 160°F (71°C) Without Cassette

RELATIVE HUMIDITY

Operating: 20 to 80% - Standard Cassette
Storage: 5 to 95% - Without Cassette

ALTITUDE

Operating: 0-12,000 feet (3,650m)
Storage: 0-50,000 feet (15,240m)

DEFINITION OF TERMS

The following words are defined to aid the reader who may be unfamiliar with the terms in this publication. The list is not a complete glossary; it is just an elementary guide to words common to this publication.

BLOCK

A string of 88 data characters preceded and followed by an inter-block gap (Figure 1-3).

BOT

Beginning of tape (Figure 1-3).

BUFFER

An intermediate storage device between magnetic tape and the electronics of the MSR Terminal; it groups data prior to writing on tape, groups data read from tape before printing, and provides speed conversions between the tape read/write and terminal electronics.

CASSETTE

An enclosure with two built-in spools for transporting the magnetic tape. The cassette is usually made of a plastic or similar material.

CHARACTER

A letter, digit, or symbol that can be printed; a non-printable character such as a space or a character that is used for a control function.

DATA

A general term used to denote numbers, letters, symbols, or control codes.

DUPLEX

Describes two operations, such as sending and receiving, occurring on the same line or equipment; full duplex means simultaneous send and receive; half duplex means send or receive but not simultaneous.

EOT

End of tape (Figure 1-3).

FAST FORWARD

Moving the tape at a rapid rate in the forward direction.

FAST REVERSE (REWIND)

Moving the tape at a rapid rate in the reverse direction.

INTER-BLOCK GAP

An erased portion of tape that always precedes and follows a block of data. A nominal inter-block gap generated by the MTA is approximately 0.8 inches of erased tape (Figure 1-3).

LOCAL

Operation within the equipment (Printer and MTA) itself, as opposed to on-line operations.

ON-LINE

Describes a condition when the Printer is ready to, and does, transmit or receive data over a communication media.

READ

Read or play back the data on the tape. Data is read in 88 character blocks.

SERIAL

Occurring sequentially with time, one after the other.

TAPE (MAGNETIC TAPE)

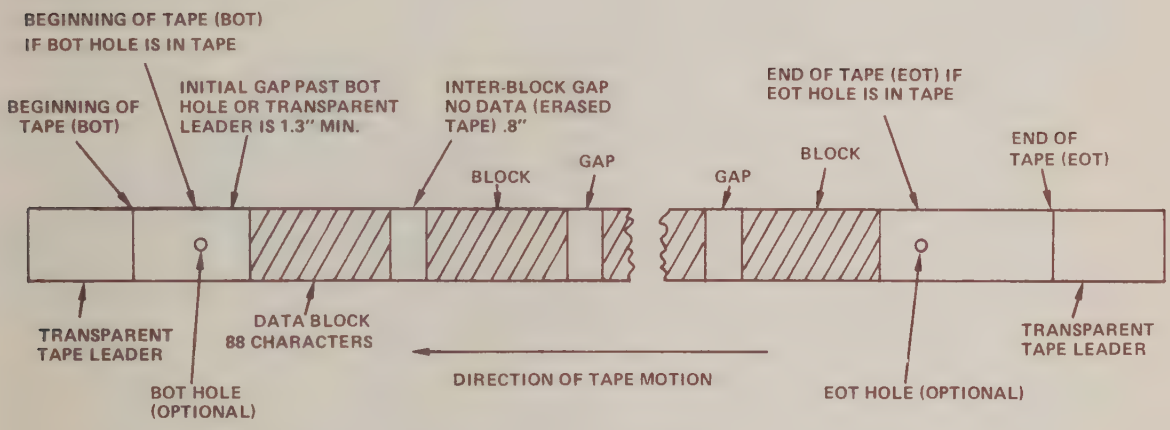
The magnetic tape in the cassette on which data is stored.

WRITE

Write, record, or store data on the tape. Data is written on tape in 88 data character blocks.

DATA BLOCK WRITE FORMAT

Figure 1-3 shows how data is formatted on tape. There is a beginning of tape (BOT) and end of tape (EOT) leader at each end of the tape. This leader is usually transparent tape. Optionally there may be a BOT hole and an EOT hole in the tape close to the transparent leader. There is an inter-block gap before and after every data block. This gap is nominally 0.8 inches of erased tape. A data block always contains 88 characters. A cassette can store approximately 1,000 blocks of data.


BEGINNING OF TAPE (BOT)
IF BOT HOLE IS IN TAPE
BEGINNING OF TAPE (BOT)
INITIAL GAP PAST BOT HOLE OR TRANSPARENT LEADER IS 1.3" MIN.
INTER-BLOCK GAP NO DATA (ERASED TAPE) .8"
BLOCK
GAP
END OF TAPE (EOT) IF EOT HOLE IS IN TAPE
GAP
BLOCK
END OF TAPE (EOT)
TRANSPARENT TAPE LEADER
DATA BLOCK 88 CHARACTERS
BOT HOLE (OPTIONAL)
DIRECTION OF TAPE MOTION
EOT HOLE (OPTIONAL)
TRANSPARENT TAPE LEADER

MTA-5003

Figure 1-3. Data Block Write Format

FORMATTING LAST DATA BLOCK

In formatting the last block of data, in the two cases described below, DC3 (READER OFF) codes must be included as noted to assure that the Reader does not turn off before all the recorded data has been transmitted from the last block. If the below procedures are not followed, the MTA may switch to the STOP mode before all characters are transmitted.

CASE	DESCRIPTION	FORMAT REQUIREMENT
1	Data to be transmitted at 10 characters per second or any "CARRIAGE RETURN'S are recorded within the last 28 characters of the last data block.	Write a DC3 as last recorded character.
2	One or more READER OFF* codes are recorded within the last 28 characters, but prior to the last character.	Write an additional block containing a DC3 for each READER OFF code within the last 28 characters recorded. (See EXAMPLE below.)

*Since strap arrangement of remote Printers to which taped data will be sent is usually not known, include in Case 2 any READER OFF codes (e.g., DC1, DC3, EOT) which may be strap-enabled.

EXAMPLE:

Last 28 characters of last Block of information

Required Extra 88 character blocks (LF is used in the extra blocks to provide automatic fills to complete blocks. Assure that LF WRITE INHIBIT switch is not on, since this will prevent LF from completing blocks with fills.)

SECTION 2

MTA CONTROL

GENERAL

All the switches and indicators are conveniently located on the face of the MTA bridge assembly and on the Printer keyboard. The following describes the function of switches and indicators on the MTA bridge and a description of the effect of control codes. For information on the keyboard, switches, and indicators on the Printer, refer to the Printer Operator's Manual, GEK-36115.

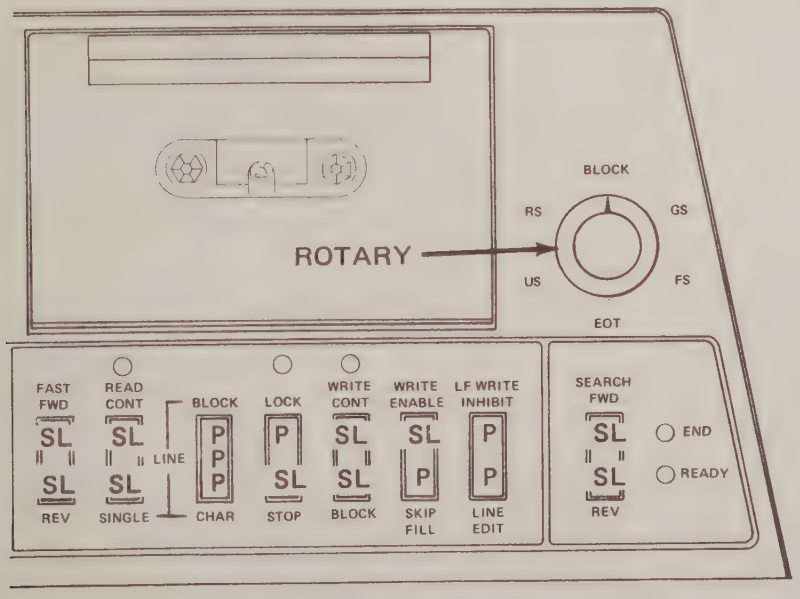
MTA SWITCH CHARACTERISTICS

Except for the six position rotary switch, all the switches on the MTA are of the three position rocker type. These switches are momentarily pressed at either end for the desired function. Most of the switches are spring loaded and return to the middle position (neither end of switch in). These switches are labeled SL in Figure 2-1.

The remaining switches stay in the position pressed, keeping that function active. The other end of the switch must be pressed to return to the middle position. These switches are labeled P in Figure 2-1.

SWITCH AND INDICATOR FUNCTIONS

Figure 2-2 describes the primary functions of the switches and indicators on the MTA. Only one side of a dual MTA is shown because both units operate the same.



MTA-5004

Figure 2-1. Switch Characteristics

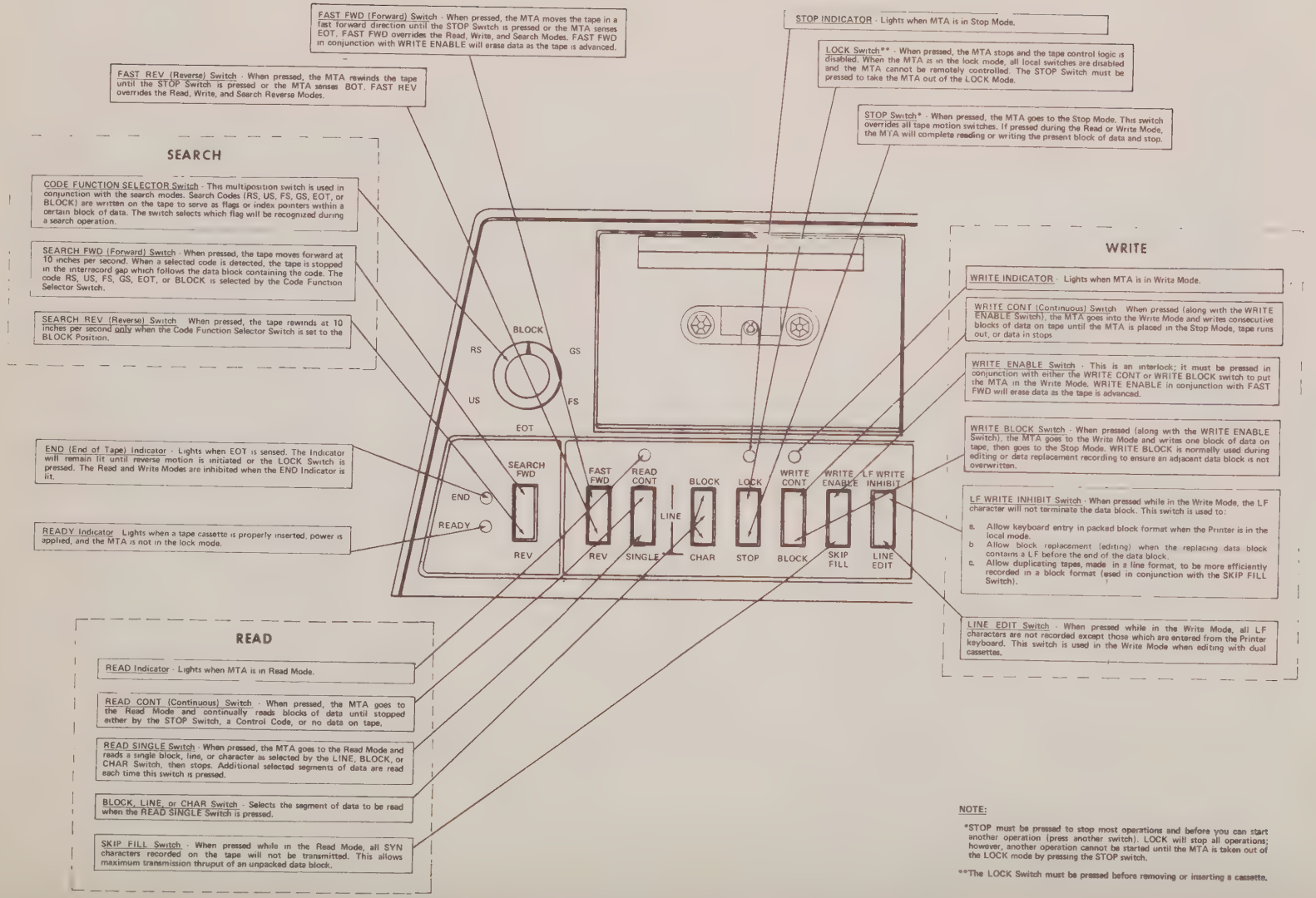

FAST FWD (Forward) Switch · When pressed, the MTA moves the tape in a fast forward direction until the STOP Switch is pressed or the MTA senses EOT. FAST FWD overrides the Read, Write, and Search Modes. FAST FWD in conjunction with WRITE ENABLE will erase data as the tape is advanced.
FAST REV (Reverse) Switch · When pressed, the MTA rewinds the tape until the STOP Switch is pressed or the MTA senses BOT. FAST REV overrides the Read, Write, and Search Reverse Modes.
STOP INDICATOR · Lights when MTA is in Stop Mode.
LOCK Switch** · When pressed, the MTA stops and the tape control logic is disabled. When the MTA is in the lock mode, all local switches are disabled and the MTA cannot be remotely controlled. The STOP Switch must be pressed to take the MTA out of the LOCK Mode.
STOP Switch* · When pressed, the MTA goes to the Stop Mode. This switch overrides all tape motion switches. If pressed during the Read or Write Mode, the MTA will complete reading or writing the present block of data and stop.
SEARCH
CODE FUNCTION SELECTOR Switch · This multiposition switch is used in conjunction with the search modes. Search Codes (RS, US, FS, GS, EOT, or BLOCK) are written on the tape to serve as flags or index pointers within a certain block of data. The switch selects which flag will be recognized during a search operation.
SEARCH FWD (Forward) Switch · When pressed, the tape moves forward at 10 inches per second. When a selected code is detected, the tape is stopped in the interrecord gap which follows the data block containing the code. The code RS, US, FS, GS, EOT, or BLOCK is selected by the Code Function Selector Switch.
SEARCH REV (Reverse) Switch · When pressed, the tape rewinds at 10 inches per second only when the Code Function Selector Switch is set to the BLOCK Position.
END (End of Tape) Indicator · Lights when EOT is sensed. The Indicator will remain lit until reverse motion is initiated or the LOCK Switch is pressed. The Read and Write Modes are inhibited when the END Indicator is lit.
READY Indicator · Lights when a tape cassette is properly inserted, power is applied, and the MTA is not in the lock mode.
BLOCK
RS
GS
US
FS
EOT
SEARCH FWD
END
READY
REV
FAST FWD
READ CONT
LINE
SINGLE
BLOCK
LOCK
CHAR
STOP
WRITE CONT
WRITE ENABLE
LF WRITE INHIBIT
BLOCK
SKIP FILL
LINE EDIT
WRITE
WRITE INDICATOR · Lights when MTA is in Write Mode.
WRITE CONT (Continuous) Switch · When pressed (along with the WRITE ENABLE Switch), the MTA goes into the Write Mode and writes consecutive blocks of data on tape until the MTA is placed in the Stop Mode, tape runs out, or data in stops
WRITE ENABLE Switch · This is an interlock; it must be pressed in conjunction with either the WRITE CONT or WRITE BLOCK switch to put the MTA in the Write Mode. WRITE ENABLE in conjunction with FAST FWD will erase data as the tape is advanced.
WRITE BLOCK Switch · When pressed (along with the WRITE ENABLE Switch), the MTA goes to the Write Mode and writes one block of data on tape, then goes to the Stop Mode. WRITE BLOCK is normally used during editing or data replacement recording to ensure an adjacent data block is not overwritten.
LF WRITE INHIBIT Switch · When pressed while in the Write Mode, the LF character will not terminate the data block. This switch is used to:
a. Allow keyboard entry in packed block format when the Printer is in the local mode.
b Allow block replacement (editing) when the replacing data block contains a LF before the end of the data block.
c. Allow duplicating tapes, made in a line format, to be more efficiently recorded in a block format (used in conjunction with the SKIP FILL Switch).
LINE EDIT Switch · When pressed while in the Write Mode, all LF characters are not recorded except those which are entered from the Printer keyboard. This switch is used in the Write Mode when editing with dual cassettes.
READ
READ Indicator · Lights when MTA is in Read Mode.
READ CONT (Continuous) Switch · When pressed, the MTA goes to the Read Mode and continually reads blocks of data until stopped either by the STOP Switch, a Control Code, or no data on tape.
READ SINGLE Switch · When pressed, the MTA goes to the Read Mode and reads a single block, line, or character as selected by the LINE, BLOCK, or CHAR Switch, then stops. Additional selected segments of data are read each time this switch is pressed.
BLOCK, LINE, or CHAR Switch · Selects the segment of data to be read when the READ SINGLE Switch is pressed.
SKIP FILL Switch · When pressed while in the Read Mode, all SYN characters recorded on the tape will not be transmitted. This allows maximum transmission thruput of an unpacked data block.
NOTE:
*STOP must be pressed to stop most operations and before you can start another operation (press another switch). LOCK will stop all operations; however, another operation cannot be started until the MTA is taken out of the LOCK mode by pressing the STOP switch.
**The LOCK Switch must be pressed before removing or inserting a cassette.
MTA-5005

Figure 2-2. Magnetic Tape Accessory (MTA) Switch and Indicator Functions

CONTROL CODES

CODE	STOP MODE	WRITE MODE	READ MODE	READ FROM TAPE
DC 1 (READ ON)	RECEIVED Enabled: Transfers to Read mode. DC 1 not recorded. Not Enabled: Inhibits transfer to READ mode.	RECOGNIZED Recorded as normal data.	RECOGNIZED No action.	Enabled: Transfers to STOP mode in IRG following block containing DC 1 after block READ. Data in MTA buffer transmitted upon receiving DC 1. Any other received code, or manual intervention erases contents of buffer. Not Enabled: Inhibits transfer to STOP mode when DC 1 read from tape.
DC 2 (WRITE ON)	RECEIVED Enabled: Transfers to WRITE mode. DC 2 not recorded. Not Enabled: Inhibits transfer to WRITE mode.	RECOGNIZED Recorded as normal data.	RECOGNIZED No action.	No action.
DC 3 (READ OFF)	RECOGNIZED No action.	RECOGNIZED Recorded as normal data.	RECEIVED Transfers to STOP mode. When tape in motion when received, stops at next IRG. Data in MTA buffer transmitted upon receiving DC 1. Any other received code, or manual intervention will erase contents of buffer.	Transfers to STOP mode in IRG following block containing DC 3 after block READ. Data in MTA buffer transmitted upon receiving DC 1. Any other received code, or manual intervention erases contents of buffer.
DC 4 (WRITE OFF)	RECEIVED No action.	RECEIVED Unrecorded data in MTA buffer recorded, Then transfer to STOP mode. DC 4 not recorded. MTA responds to DC 4 code only when received.	RECOGNIZED No action.	When transferring data to second unit of dual magnetic tape accessory, DC 4 recorded as data on WRITE unit.
ESC 0 (BLOCK REWIND)	RECEIVED Enabled: Rewind to previous IRG, then transfer to STOP mode. Not Enabled: Inhibits block rewind in any mode.	RECOGNIZED Recorded as normal data.	RECEIVED Enabled: Stops at IRG following block currently being read, rewinds to previous IRG, then transfers to STOP mode. Not Enabled: Inhibits block Rewind.	Read as normal data.
ESC DLE DEL (REWIND)	RECEIVED Enabled: Rewind to BOT marker, then transfers to STOP mode. Not Enabled: Inhibits rewind in any mode.	RECOGNIZED Recorded as normal data.	RECOGNIZED No action.	Enabled: Stops at IRG following block containing ESC DLE DEL code, then rewinds to BOT marker, then transfers to STOP mode. Not Enabled: Inhibits rewind when read from tape.
EOT (STOP IN WRITE OR READ MODE)	RECOGNIZED No action.	RECEIVED Enabled: Transfer to STOP mode. Data in MTA buffer recorded. EOT code not recorded. Not Enabled: Inhibits transfer to STOP mode. EOT code recorded as normal data.	RECEIVED Enabled: Transfers to Stop at IRG following block currently being read. Data in MTA buffer transmitted upon receiving a DC 1. Any other code, or manual intervention will erase data from buffer. Not Enabled: No action.	Enabled: Stops at IRG following block containing EOT code. Data in MTA buffer transmitted upon receiving a DC 1. Any other code, or manual intervention will erase data from buffer. Not Enabled: No action.

RECEIVED: Indicates information received from external source through data set connector.
RECOGNIZED: Indicates information received from external source, keyboard, answerback or other similar source.
READ FROM TAPE: Indicates response by MTA unit from which information is read while in READ mode.
ENABLED: Circuit available to perform indicated function.
NOT ENABLED: Circuit not available to perform indicated function.

EDITING CODES & EDITING SEARCH FUNCTIONS

	SINGLE MTA UNIT		DUAL MTA UNIT	
CODE	READ MODE	WRITE MODE	READ UNIT	WRITE UNIT
CAN (CANCEL) CTL X	RECOGNIZED No action.	RECEIVED Recorded as normal data. FROM KEYBOARD IN LOCAL MODE—Erases contents of MTA Buffer.	RECOGNIZED No action.	RECEIVED Recorded as normal data. FROM KEYBOARD IN LOCAL MODE—Erases contents of MTA Buffer.
SUB (SUBSTITUTE) CTL Z	RECOGNIZED No action.	RECEIVED Recorded as normal data. FROM KEYBOARD IN LOCAL MODE—Erases last character entered in buffer before data has been transferred to tape.	RECOGNIZED No action.	RECEIVED Recorded as normal data. FROM KEYBOARD IN LOCAL MODE—Erases last character entered in buffer before data has been transferred to tape.
	STOP MODE	WRITE MODE	READ MODE	NOTES
FS (FILE SEPARATOR)	SEARCH FWD Selector switch must be set to FS. Pressing the SEARCH FWD switch starts forward tape motion. Tape motion stops at IRG following block containing FS code. If FS code not recorded on tape, the tape will advance to EOT and transfer to STOP mode. STOP and END indicators illuminate. Ready indicator remains illuminated.	RECOGNIZED Recorded as normal data.	RECOGNIZED No action.	1. Search codes are used only in local mode, but may be recorded on tape from a remote unit for future local search capability. 2. When a search code is recorded in normal format where SYN characters are used to fill the recorded block, entry of the LF code would serve as a command to the MTA to fill the block with SYN characters. Paper does not advance when LF code is read during search mode. 3. When a search code is recorded in packed data format in which it is desired to switch directly from search mode to read mode, the search code should be recorded with a LF code in the block, with data beginning in the next block. 4. See response to EOT code when read from tape under coded control table. 5. When searching in the reverse direction on tape, the MTA must be in the STOP mode. Pressing the SEARCH REV switch when the selector switch is not set at the BLOCK position causes no action. The MTA searches in the reverse direction block by block. If no data recorded on tape, the SEARCH REV action will cause the tape to rewind to EOT, then the MTA will switch to the STOP mode.
GS (GROUP SEPARATOR)	SEARCH FWD Selector switch must be set to GS. Search and response to GS code same as for the FS code.	RECOGNIZED Recorded as normal data.	RECOGNIZED No action.	
RS (RECORD SEPARATOR)	SEARCH FWD Selector switch must be set to RS. Search and response to RS code same as for FS code.	RECOGNIZED Recorded as normal data.	RECOGNIZED No action.	
US (UNIT SEPARATOR)	SEARCH FWD Selector switch must be set to US. Search and response to US code same as for FS code.	RECOGNIZED Recorded as normal data.	RECOGNIZED No action.	
EOT (END OF TRANS-MISSION)	SEARCH FWD Selector switch must be set to EOT. Search and response to EOT code same as for FS code.	RECOGNIZED Recorded as normal data. Printer motor is switched off when entered from keyboard.	RECOGNIZED No action.	
BLOCK	SEARCH FWD MTA must be in STOP mode before search. Selector switch must be set to block. Pressing the SEARCH FWD switch starts forward tape motion. Tape stops at BOT. Thereafter search stops at each IRG. If no data recorded on tape, the MTA responds as for no separator code recorded on tape.	RECOGNIZED No action.	RECOGNIZED No action.	

SECTION 3

MTA OPERATING PROCEDURES

INTRODUCTION

The procedures in this section explain manual operation of the MTA and TermiNet 30 Printer.

The operator should be familiar with the operation of the TermiNet 30 Printer by studying Part I of this manual.

SINGLE AND DUAL CASSETTE PROCEDURES

Most of the procedures are written for a single cassette unit. Any single cassette unit operation can be performed in the LOCAL Mode on the left or right side of a dual cassette unit.

The dual cassette unit has two identical units except for the placement of some switches on the control panel. Within these operating procedures, the left unit will be termed MTA/1 and the right unit will be termed MTA/2 where dual operating procedures are provided.

For ON LINE operations where a remote unit addresses the dual cassette unit with the ASCII coded Device Codes (DC - 1 thru DC - 4) for control of reading and writing on tape, the left unit (MTA/1) is normally the READ unit. The right unit (MTA/2) is normally the WRITE unit.

TRANSPARENCY MODE OF OPERATION

The MTA can be placed in the Transparency Mode of operation by pressing the Printer TRANS switch to ON (down). When in the Transparency Mode, the MTA will not generate time delays or deleted control codes. The data to be recorded must consist of an 8 - bit character. To read the data for transmission in the ON LINE Mode, the Printer TRANS switch must be positioned to ON (down).

WRITE CHARACTERISTICS

Data is written on tape in blocks. Each block consists of 88 characters. Depending upon the procedure used to record data, the block may contain one line of printed data, or it may contain more than one line of data. When the Printer keyboard is used to enter data, it can be observed that no data is recorded on the tape until one of two actions occurs. Either a Line Feed command initiated the write command in the MTA to write a block of data on tape, or after the 88th character was entered the block of data was recorded.

The block of data is recorded on tape as the result of one of the following events:

a. A Line Feed command is entered from the keyboard with the LF WRITE INHIBIT switch set to the middle position (OFF).

b. The 88th character is entered before a Line Feed command is entered from the keyboard with the LF WRITE INHIBIT switch set to the middle position (OFF).

c. The 88th character is entered from the keyboard with the LF WRITE INHIBIT switch set to ON (top of switch is pressed in), regardless of the number of Line Feed commands entered.

d. The LF WRITE INHIBIT switch is set from ON to OFF (middle position) after characters have been entered from the keyboard, but with less than 88 characters entered in the current block of data.

e. The LOCK/STOP switch is set to the STOP position.

NOTE

In the case of conditions a., d., and e., above, the block of data recorded on tape will be filled to a total of 88 characters automatically by the MTA. The characters automatically entered are SYN characters (See ASCII Code).

READ CHARACTERISTICS

During the WRITE Mode, characters are stored in a device called a buffer, located in the MTA electronics. When the buffer is filled to 88 characters, all 88 characters are then recorded in a block on the tape. When the READ Mode is entered on the MTA, the data on the tape is read from the tape a block at a time and stored in a buffer. The data is then pro-

vided to the Printer at the selected baud rate for transmission or printout.

When operating in the LOCAL Mode, the operator may select the manner in which data will be read, or printed out.

The data may be read in any one of the following ways:

a. Continuous reading, block after block, at the selected baud rate. If a block is automatically filled with SYN characters, each SYN character is sequentially read from the buffer.

b. Continuous reading, block after block, at the selected baud rate. When the SKIP FILL switch is set to ON, any SYN characters used to fill a block are inhibited from being stored in the buffer, thus no delay is encountered between lines of data.

c. Single line reading with or without SYN characters (SKIP FILL switch OFF or ON).

d. Single character reading.

e. Single block reading, in which SYN characters are selected as fill time or not, depending upon position of SKIP FILL switch.

Since data can be read from tape much faster than the Printer can print or transmit, no delay is encountered between reading blocks of data to fill the 88 character buffer. Therefore, a continuous stream of characters is applied to the Printer at the selected baud rate.

ON LINE OPERATION

When the MTA is switched into the WRITE Mode or the READ Mode from a remote unit through the use of the Device Codes, recording on tape is the same as when the LF WRITE INHIBIT switch is ON. The reading of data is the same as if the SKIP FILL switch is ON. Thus, 88 usable characters comprise each block of data. SYN characters are not present.

CASSETTE HANDLING AND LOADING

HANDLING AND STORAGE

Do not bring cassette near magnets or a strong magnetic field since this may erase data previously written on the cassette. To avoid contamination, do not remove cassette from its storage case unless it is to be used. Do not touch the tape with fingers; oil and other contaminants are ofter on finger tips.

When you are finished using a cassette, do the following:

1. Rewind tape in the cassette.
2. Store cassette in its container.
3. Store cassette and container in a clean location at room temperature, away from tools or large metal objects that may be magnetized.

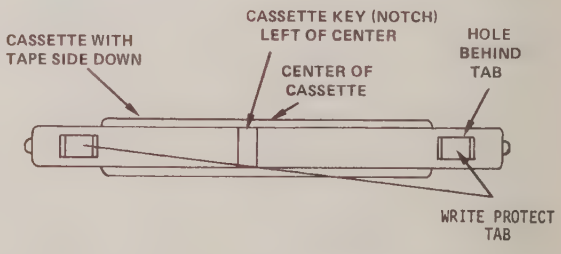
WRITE PROTECT

The cassette has two Write Protect tabs (see Figure 3-1) located at the rear corners of the cassette. The Write Protect tab is used to prevent previously written data from being erased or written over. With the open end of the cassette up and the "A" side of the tape facing you, the right side tab is the only one of the two tabs that provides protection.

To enable the cassette for Write Protect, snap the tab out to expose a hole in the rear of the cassette. The MTA cannot be switched into either WRITE or ERASE Mode.

NOTE

Attempting to switch the MTA into either the WRITE or ERASE Mode will cause an INTERRUPT on the TermiNet 30 Printer.



MTA-5006

Figure 3-1. Write Protect Tab

LOADING THE CASSETTE

The only cassette that can be used in the MTA is one containing the key notch (see Figure 3-2) cut in

the bottom of the cassette case. Hold the cassette with the open side up, "A" side toward you for loading.

Proceed as follows to load a cassette into the MTA:

1. Press the LOCK/STOP switch to the LOCK position by pressing the top of the switch in.

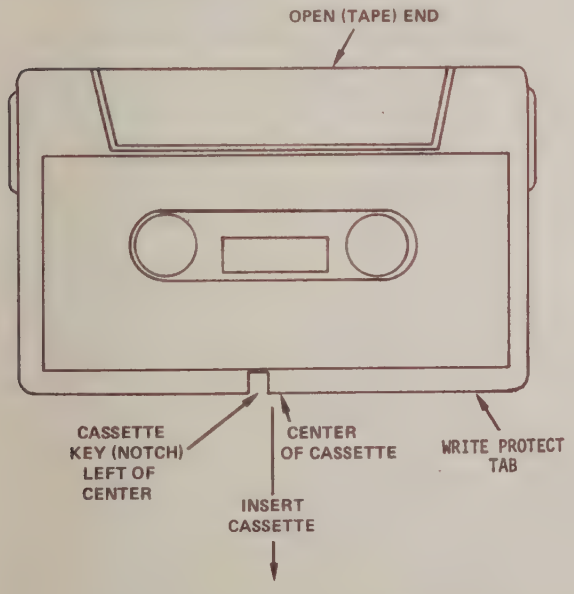
CAUTION

BEFORE LOADING OR REMOVING A CASSETTE, THE MTA MUST BE SET TO BOTH THE LOCK POSITION. DAMAGE TO BOTH THE MTA AND THE CASSETTE MAY OCCUR BY FORCING THE MTA DOOR WHEN NOT SWITCHED TO THE LOCK MODE.

2. Pull handle at the top of the cassette door to swing open the door.

3. Insert the cassette, oriented as illustrated in Figure 3-2, into the cassette slides of the door. Push the cassette to the bottom of the door.

4. Close the MTA cassette door.



MTA-5007

Figure 3-2. Cassette Loading

OPERATING THE MTA

FAST FORWARD AND FAST REVERSE

When the FAST FWD (Forward) switch is pressed, the MTA moves the tape in a fast forward direction until the STOP switch is pressed or the MTA senses EOT. When EOT is sensed, the END lamp lights.

When the FAST REV (Reverse) switch is pressed, the MTA moves the tape in a fast reverse direction until the STOP switch is pressed or the MTA senses BOT.

ERASING TAPE

Portions of, or the entire tape in a cassette can be erased by the MTA. To erase tape, press and hold the WRITE ENABLE switch, then press the FAST FWD switches. The tape will advance rapidly and will be erased until tape motion is stopped.

The following pages provide guidance in operating the MTA for the various applications listed below:

Write Continuous/Block Mode

Write Continuous/Line Mode

Write Edit Before Data Entry

Write Block Mode (Block Edit, Block Replacement)

Search Mode

Read Continuous Mode

Read Single Mode

Duplicating a Tape

Duplicate Tape and Edit Copy Tape

MTA Prompting Technique

WRITE CONTINUOUS/BLOCK MODE

Data is written on tape in continuous 88 character blocks. If desired, a printout can be obtained while entering data. A line can end, a linefeed and carriage return performed, and the next line begin in the same block of data. This is called a "packed block". The write continuous/block format (packed block) conserves tape and permits writing the maximum number of characters per block of tape. This operation can be performed in the "Local" or "On Line" mode of operation. To write on tape as described above, proceed as follows:

PRINTER STATUS

a. - LOCAL switch in the On (down) position for local operation.

   - LOCAL switch in the Off (up) position if writing data from line.

b. RATE switch in the 30 position or position dictated by line.

c. AUTO LF switch in the On (down) position.

d. Motor On (if a printout is not desired, turn motor off).

e. Return/Linefeed performed.

MTA OPERATION

- Insert cassette (check that Write Enable tabs are in place). READY lamp on MTA lights.

1. Press FAST REV if you want to start at BOT. If tape is not at BOT, tape will rewind at a rapid rate and stop; STOP lamp lights.

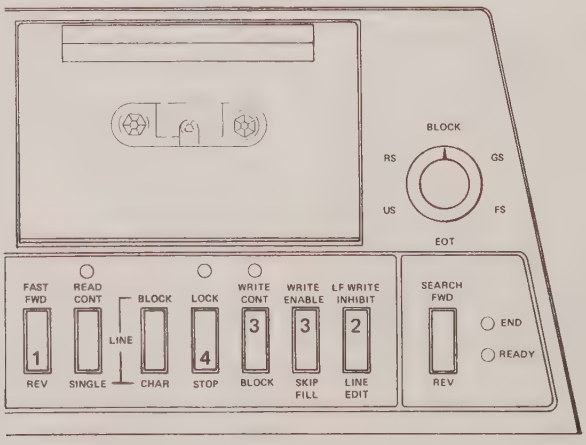
2. Press LF WRITE INHIBIT.

3. Press WRITE ENABLE, then press WRITE CONT simultaneously. WRITE lamp lights; STOP lamp goes out.

- If in "Local" mode of operation, proceed to type from keyboard.

- If in "On Line" mode of operation, the MTA will write data as it is received.

4. When data entry is complete, press STOP. STOP lamp lights.



WRITE CONTINUOUS/LINE MODE

Data is written on tape in continuous 88 character blocks. If desired, a printout also occurs while entering data. When a line feed is entered, the data block is terminated; then written on tape. Because a line feed will occur before the 88th character position with an 80 column Printer, the remaining character positions will be filled with SYN characters before the block is terminated and written on tape. The write continuous/line format (unpacked block) results in one line to a block of data written on tape.

Although this format uses more tape, there are advantages; e.g., read and edit a line of data at a time. This operation can be done in the "Local" mode of operation. In "On Line" mode of operation, received data will be packed data unless fill characters are also received from line. To write on tape as described above, proceed as follows:

PRINTER STATUS

a. - LOCAL switch in the On (down) position for local operation.
   - LOCAL switch in the Off (up) position if writing data from "line".

b. RATE switch in the 30 position or the position dictated by the "line".

c. AUTO LF switch in the On (down) position.

d. Motor On. (If a printout is not desired, turn motor off.)

e. Return/line feed performed.

MTA OPERATION

- Insert cassette (check that Write Enable Tabs are in place). READY lamp on MTA lights.

1. Press FAST REV if you want to start at BOT. If tape is not at BOT, tape will rewind at a rapid rate and stop. STOP lamp lights.

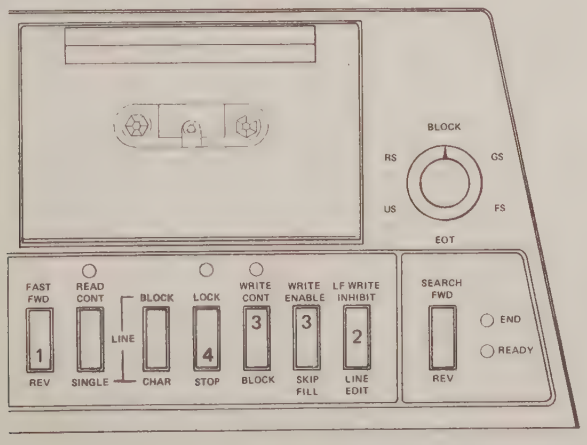
2. Make certain LF WRITE INHIBIT/LINE EDIT switch is in middle position.

3. Press WRITE ENABLE, then press WRITE CONT simultaneously. WRITE lamp lights; STOP lamp goes out.

- If in "Local" mode of operation, enter data from keyboard.

- If in "On Line" mode of operation, the MTA will write data as it is received.

4. When data entry is complete, press STOP; STOP lamp lights.



WRITE EDIT BEFORE DATA ENTRY

While entering data in any local write mode, the data can be changed before it is written on tape.

CHARACTER SUBSTITUTE

If the last character entered is incorrect, enter a SUB control character (CTL Z on the Printer keyboard). This action erases the last character entered in the buffer. Then enter the correct character. The SUB character acts only as a control and is not recorded.

BLOCK REWRITE

If the data in the block about to be entered is incorrect, or a change is desired, enter a CAN control character (CTL X on the Printer keyboard). This action erases the contents of the buffer. The data can then be re-entered as desired. The CAN character acts only as a control and is not recorded.

NOTES

a. The SUB and CAN control characters will be recorded as normal data with the Printer in the On-Line Mode.

b. The SUB and CAN editing functions are disabled if the Printer is in the Transparency Mode.

WRITE BLOCK MODE (BLOCK EDIT, BLOCK REPLACEMENT)

The Write Block mode is used primarily to replace a single block of data during an editing function. If desired, a printout can be obtained while entering data. In the Write Block mode, the entry of the 88th character, the entry of a LF code (with the LF WRITE INHIBIT switch off), or pressing the STOP switch will cause the following:

- The remaining character positions (if any) are filled with SYN characters.
- The block is terminated, then written on tape.
- The MTA automatically goes to the STOP mode.

If the new data block to be written contains one or more LF codes before the end of the block, the LF WRITE INHIBIT switch should be pressed. This prevents premature termination of a block by the entry of a LF code. If the new block contains 88 characters, the MTA will automatically terminate the block, write the data, and go to the STOP mode. Any further data entered after the 88th character will be rejected. Because only one 88 character block can be written at a time, the next block of data on tape is protected from being written over if more than 88 characters were entered by mistake. The WRITE BLOCK mode is primarily performed in the "Local" mode of operation. To write on tape as described above, proceed as follows:

PRINTER STATUS

a. LOCAL switch in the On (down) position.

b. RATE switch in the 30 position.

c. Auto LF switch in the On (down) position.

d. Motor On (if a printout is not desired, turn Motor off).

e. Return/Linefeed performed.

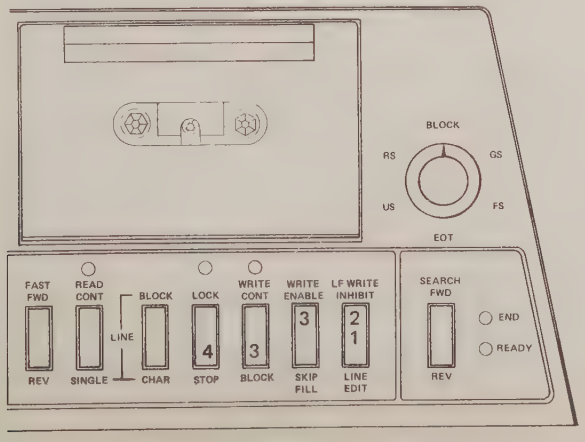
MTA OPERATION

- Insert cassette (check that Write Enable tabs are in place). READY lamp on MTA lights.
- Advance or rewind tape to the inter-block gap before the block you wish to replace. See instructions in "SEARCH MODE".

1. If you want the block to terminate when a LF code is entered, put LF WRITE INHIBIT/LINE EDIT switch in middle position.
2. If you want the LF code to be ignored, press LF WRITE INHIBIT switch.
3. Press WRITE ENABLE, then press WRITE BLOCK simultaneously. WRITE lamp lights; STOP lamp goes out.

- Proceed to type in data from keyboard. Make certain you do not exceed 88 characters when replacing a block of data. Every character after 88 will be rejected.

4. If you entered less than 88 characters or a LF code didn't terminate the block, press the STOP switch. The block of data is terminated, then written on tape. The MTA will go to the STOP mode.



SEARCH MODE

The MTA has the capability to search forward for one of five switch selectable ASCII codes that have been previously written on tape. The MTA will stop at the inter-block gap after the block containing the code. The five codes selectable by the Code Function Selector Switch are:

FS	File Separator
GS	Group Separator
RS	Record Separator
US	Unit Separator
EOT	End of Text
BLOCK	Block Separator

These codes may be generated from the TermiNet 30 Printer keyboard by typing and holding the CTL (control) key and then typing the key marked with the desired code, or in the case of EOT, striking the EOT key. BLOCK is a position on the MTA Selector Switch.

The SEARCH FWD (Forward)/SEARCH REV (Reverse) Switch starts the search operation.

When searching forward for a marked file, the Code Function Selector Switch must be set for the file's particular code. The MTA will stop the tape in the IBG following the marked file. A block rewind will then place the tape in such a position that the MTA can read the file.

If multiple files are recorded on the same tape, each file can be marked with a different code, and a note made as to the file contents and the file mark code. Then only the code marking the desired file need be searched for to locate the file on the tape. The tape moves at 10 inches per second. The five selectable codes are only detected in the Search Forward mode. If no codes are detected, the search will continue until EOT is reached; then the MTA will stop.

With the Code Function Selector Switch in the BLOCK position, the MTA will stop in the next inter-block in the Search Forward or Search Reverse modes. If there is no data (no inter-block gap) on the tape, the search will continue until EOT or BOT is reached; then the MTA will stop.

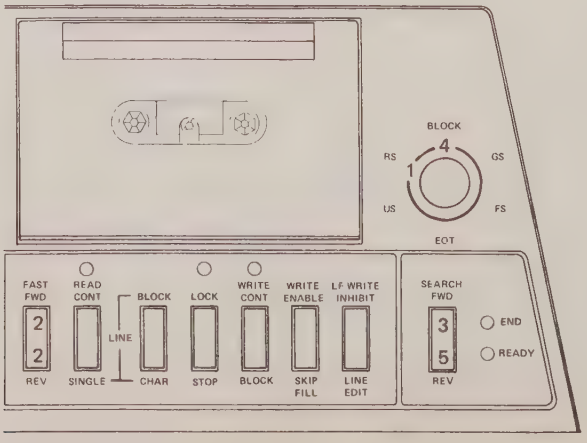
SEARCH OPERATION

The following is a simple example of how the Search mode could be used.

Conditions: While writing data on tape, a RS code was written at the beginning of a data block. This block has an index of the succeeding data. Because this block follows other data it would be difficult to find without a search mode.

PROCEDURE

1. Rotate Code Function Selector Switch to the RS position.
2. Fast forward or reverse the tape to an estimated point before the block of index data.
3. Press SEARCH FWD. The MTA will advance the tape until the RS code is detected; then the MTA will stop in the inter-block gap after the block containing the RS code.
4. Rotate Code Function Selector Switch to the BLOCK position.
5. Press SEARCH REV. The MTA will move tape in the reverse direction and stop at the inter-block gap before the block containing the RS code. You can now go into the Read mode and print out the index data in that block.



READ CONTINUOUS MODE

Data blocks are read at a continuous rate until STOP is pressed, the end of tape (EOT) is reached, or there is no data on tape. The read speed is dictated by the Printer RATE switch.

NOTE

When any Read mode is started or already in progress, and there is no data on tape, the MTA will continue to try to read tape for a few seconds, then stop.

This operation can be done in the "Local" or "On Line" mode of operation. To go in the Read Continuous Mode, proceed as follows:

PRINTER STATUS

a. -LOCAL switch in the On (down) position for local operation.
-LOCAL switch in the Off (up) position if reading data for transmitting "On Line".

NOTE

To avoid accidentally transmitting unwanted data, do not put Printer "On Line" until you are ready to read.

b. RATE switch in the 30 position or the position dictated by the "Line".

c. Motor On if a printout is desired.

d. Return/Linefeed performed if printing.

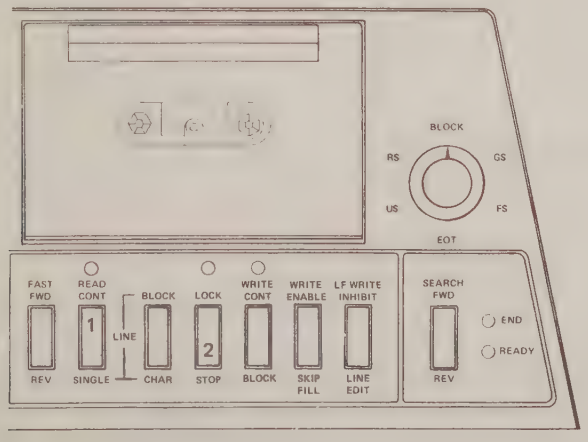
MTA OPERATION

- Insert cassette, READY lamp on MTA should light.

- Use Fast Forward, Fast Reverse, and/or Search to locate desired data.

1. Press READ CONT switch. READ lamp lights, MTA reads blocks of data at a continuous rate, and Printer prints data. If "On Line", data being read is transmitted.

2. When desired data is read, press STOP switch; STOP lamp lights.



READ SINGLE MODE

Depending on the position of the BLOCK, LINE, or CHAR Switch, one block, line, or character can be read at a time in the "LOCAL" mode of operation. The read single mode of operation is useful when editing tape. Proceed as follows:

NOTE

If required, the read single operations can be performed in the "On Line" mode of operation. Do this in the same manner as the READ CONTINUOUS MODE.

PRINTER STATUS

a. LOCAL switch in the On (down) position.

b. RATE switch in the 30 position.

c. Motor On.

d. Return/Linefeed performed.

MTA OPERATION

- Insert cassette. READY lamp on MTA lights.

- Use Fast Forward, Fast Reverse, and/or Search to locate desired data.

READ SINGLE BLOCK

1. Press BLOCK switch.

4. Press READ SINGLE switch. READ lamp lights, MTA reads one block of data and stops; and the Printer prints that same block of data and stops. Succeeding blocks of data are read each time the READ SINGLE switch is pressed.

READ SINGLE LINE

2. Press LINE switch (switch in middle position).

4. Press READ SINGLE switch. READ lamp lights, MTA reads one block of data, stores this data in a buffer, then stops.

NOTE

See Page 1-3 for a definition of the buffer.

However, the Printer prints one line of data and stops. If there was more than one line in the block just read, pressing the READ SINGLE switch again will cause the second line of data to print. This action continues until the buffer is empty; then pressing the READ SINGLE switch will cause the MTA to read the next block of data and stores this data in the buffer. It is important to remember that you are primarily controlling printing by the line.

READ SINGLE CHARACTER

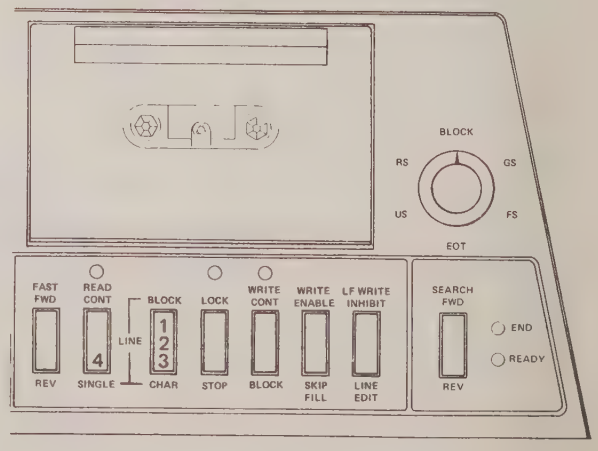
3. Press CHAR switch.

4. Press READ SINGLE switch. READ lamp lights, MTA reads one block of data, stores this data in a buffer, then stops. The MTA transmits the first character to the Printer. The Printer will act on that character, and may or may not print, depending upon the character transmitted.

Each succeeding time the READ SINGLE switch is pressed, the MTA will transmit the next character in the buffer to the Printer to be acted upon.

FOOT SWITCH OPERATION (OPTION)

A foot switch option is available that provides the identical function as the READ SINGLE switch. This option can be used in applications where pre-recorded format tapes or prompter tapes are read a line or block at a time. Also, this option may be used where extensive dual cassette editing is required, allowing the operator to work more efficiently.



DUPLICATING A TAPE

The dual cassette MTA can duplicate portions of data on a cassette or duplicate an entire cassette and print out the original cassette at the same time. Data can be duplicated at 120 characters per second with no printout. If desired, the data on the original cassette can be transmitted "On Line" at the same time the duplicate (copy) cassette is made.

To duplicate, perform the following:

PRINTER STATUS

a. -LOCAL switch in the On (down) position for "Local" operation.
-LOCAL switch in the Off (up) position for "On Line" operation. Do not put Printer "On Line" until MTA is ready to duplicate data.

b. RATE switch in the
- 10, 20, or 30 position if you want a printout.
- 120 position if you want the fastest Read/Write rate. However, there will be no printout.
- If "On Line" the position may be dictated by the line.

c. Motor On if a printout is desired.

NOTE

If the RATE switch is at the 120 position and the Motor is turned on, the Printer will be forced to operate at 30 characters per second with a printout.

MTA OPERATION

- Insert original cassette with data to be copied in MTA/1.

1. MTA/1 - Use Fast Forward, Fast Reverse, and/or Search to locate data to be copied.

- Insert copy cassette in MTA/2 (check that Write Enable tabs are in place). READY lamp on MTA/2 lights.

2. Press FAST REV on MTA/2 if you want to start at BOT. If tape is not at BOT, tape will rapidly move in the reverse direction and stop. STOP lamp lights.

3. Press LF WRITE INHIBIT on MTA/2.

4. Press WRITE ENABLE, then press WRITE CONT simultaneously on MTA/2. WRITE lamp lights, STOP lamp goes out.

5. Press READ CONT switch on MTA/1.

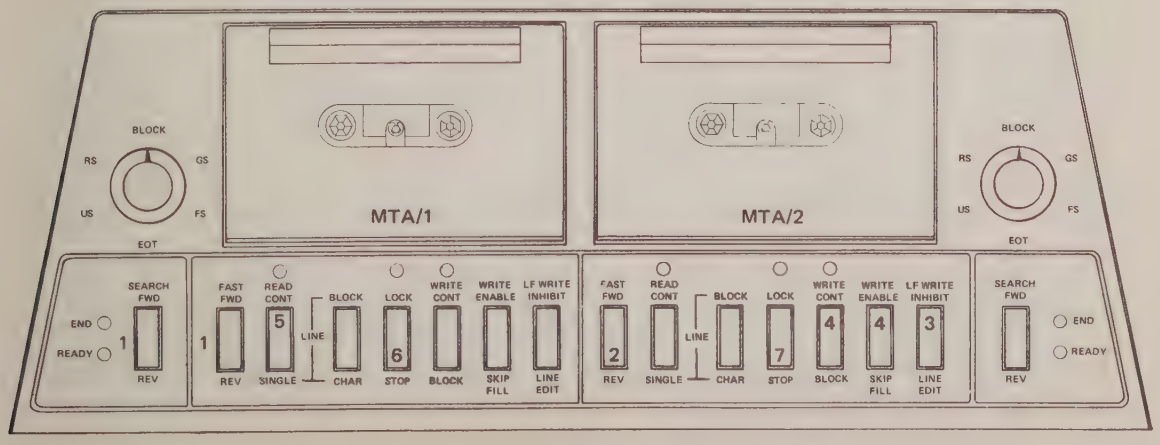
   - MTA/1 reads at a continuous rate.

   - Printer prints if set to do so.

   - MTA/2 writes data on second tape.

6. When desired data is read and written on the copy cassette, press STOP on MTA/1.

7. Press STOP on MTA/2.



DUPLICATE TAPE AND EDIT COPY TAPE

Information on a cassette may be changed, added, or deleted while duplicating a tape. This editing is done in the "Local" mode only. All editing operations affect only the copy (duplicate) tape, not the original tape. The original tape will remain unchanged unless an operational mistake is made. If you wish to protect the original tape, remove the Write Enable tabs.

Proceed as follows:

PRINTER STATUS

a. LOCAL switch in the On (down) position.

b. RATE switch in the 30 position.

c. AUTO LF switch in the On (down) position.

d. Motor On.

e. Return/Linefeed performed.

MTA OPERATION

- Insert original cassette with data to be copied in MTA/1. READY lamp lights.

1. Use Fast Forward, Fast Reverse, and/or Search to locate data to be copied on MTA/1.

- Insert copy cassette in MTA/2 (check that Write Enable tabs are in place). READY lamp lights.

2. Press FAST REV on MTA/2 if you want to start at BOT. If tape is not at BOT, tape will rapidly move in the reverse direction and stop. STOP lamp lights.

3. - Press LF WRITE INHIBIT switch if you want to copy in the Write Continuous/Block Mode.

   - Do not press LF WRITE INHIBIT switch if you want to copy in the Write Continuous/Line Mode.

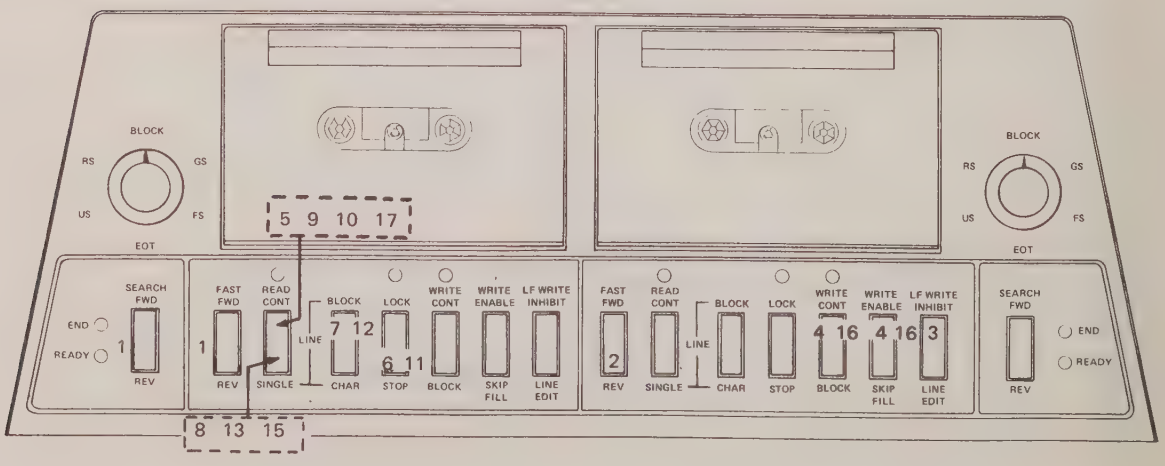
4. Press WRITE ENABLE, then WRITE CONT on MTA/2. WRITE lamp lights.

ADDING BLOCK(S) OF DATA DURING DUPLICATION

To add a block(s) of data during tape duplication, you must stop the duplication process at the point on tape before the block(s) to be added. To do this, proceed as follows:

5. Press READ CONT on MTA/1 to start tape duplication and printout of the original tape.

6. When the printout nears the block to be added, press STOP on MTA/1. READ lamp goes out and MTA stops.



7. Press BLOCK switch on MTA/1.

8. Press READ SINGLE switch on MTA/1. READ lamp lights. Next block is read, printed, and copied. Continue this operation until the MTA reads the block before the block to be added.

- Type in new block or blocks.

9. When all new blocks are added, press READ CONT on MTA/1 to resume tape duplication and printout.

- Repeat 6 through 9 to add any more blocks.

NOTE

If a mistake is made while typing a new block, refer to WRITE EDIT BEFORE DATA ENTRY for instructions on making corrections.

DELETING BLOCK(S) OF DATA WHILE DUPLICATING TAPE

To delete a block or several blocks of data from the copy while duplicating tape, proceed as follows:

10. Press READ CONT on MTA/1 to begin tape duplication and printout of the original tape.

11. When the printout nears the block(s) to be deleted, press STOP on the MTA/1. READ lamp goes out and MTA stops.

12. Press BLOCK switch on MTA/1.

13. Press READ SINGLE switch on MTA/1. READ lamp lights. Next block is read, printed, and copied. Continue this operation until the MTA reads the block before the block to be deleted.

14. Press STOP on MTA/2. WRITE lamp goes out.

15. Press READ SINGLE switch on MTA/1 once for each block to be deleted.

16. Press WRITE ENABLE, then WRITE CONT on MTA/2. WRITE lamp lights.

17. Press READ CONT on MTA/1 to resume tape duplication and printout.

MTA PROMPTING TECHNIQUE

Prompting with the dual transport MTA consists of reading a prepared cassette tape containing questions by one transport and writing the responses by another transport. The prompting tape containing the questions is read by one transport of the MTA a question at a time into the electronic buffer of the other transport and printed. The operator answers each question from the keyboard as it is asked. The question and answer is then written onto a cassette tape by the MTA transport.

Two separate methods of prompting exist; however, their basic operating procedures are similar. In one method, the question as well as the answer is written, and in the other method, only the answer is written.

Operating techniques which apply to tape duplication and editing detailed previously in this manual form the nucleus of the prompting mode. The prompting methods are detailed in the procedures which follow. The prompting (left) transport will be referred to as MTA/1 and the prompted (right) transport as MTA/2 for the following discussion.

Proceed as follows:

PRINTER STATUS

a. LOCAL switch in the On (down) position.

b. RATE switch in the 30 position.

c. AUTO LF switch in the On (down) position.

d. Motor On.

e. Return/Linefeed performed.

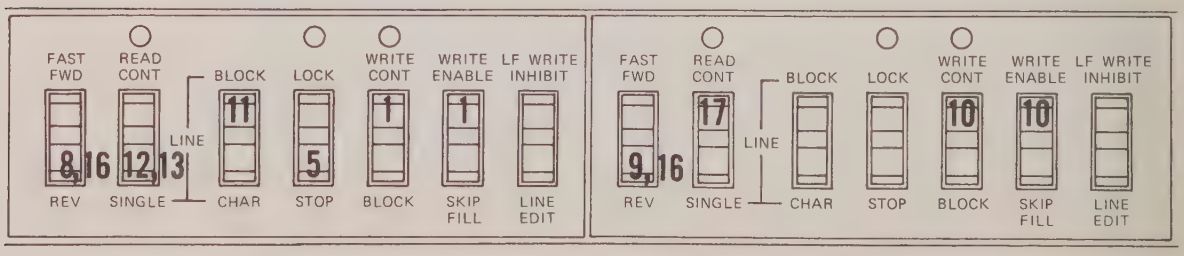
MTA PREPARATION

Insert a cassette tape in MTA/1. Observe that the READY lamp lights. Rewind the tape to its beginning.

DISCARDED QUESTION METHOD

To allow the answers but not the questions to be written onto the prompted tape, prepare the prompting tape as follows:

1. On MTA/1, press WRITE ENABLE and WRITE CONTINUOUS switches simultaneously.
2. With the Printer in LOCAL, type a tape heading. Type a CARRIAGE RETURN (CR) and a LINE FEED (LF).
3. Type Question 1 and then type a space.
4. Press the Printer TRANS switch and type a CONTROL X.
5. Release the Printer TRANS switch and press the MTA/1 STOP switch.
6. Type CR and LF.
7. Repeat steps 1 and 3 through 6 until a complete list of prompting questions has been written on the MTA/1 tape.
8. Rewind the prompting tape to its BOT leader.
9. Insert a fresh cassette tape in the MTA/2 transport and rewind it to its BOT leader.



MTA/1 MTA/2

10. On the MTA/2, press the WRITE ENABLE and WRITE CONTINUOUS Switches simultaneously.

11. On the MTA/1, press the BLOCK Switch.

12. On the MTA/1, press the READ SINGLE Switch. The Printer will print the tape heading exercise a CR and a LF and then stop.

13. Press the READ SINGLE Switch once more, and the Printer will print the first prompting question and stop.

14. From the Printer keyboard, answer the question and then type a CR and a LF.

15. Repeat steps 13 and 14 until all prompting questions have been answered.

16. Rewind both the prompting and prompted tape.

17. On the MTA/2 press the READ CONTINUOUS Switch. The Printer will print the tape heading, exercise a CR and a LF, and then list each answer followed by a CR and a LF.

NOTE

Only the answers are printed. The questions have been discarded.

SAVED QUESTION METHOD

To allow both questions and answers to be written onto the prompted tape, prepare the prompting tape as was previously described, except the Printer TRANS Switch must not be pressed and CONTROL X must not be typed. To use this prompting tape, proceed as was described in steps 13 through 16. After rewinding the prompted tape, press the MTA/2 READ CONTINUOUS Switch. The Printer will print the tape heading, exercise a CR and LF, and then list each question and answer followed by a CR and LF.

SECTION 4

TAKING CARE OF THE MTA

CLEANING

The MTA should not be cleaned with power applied. Remove all power from the Printer and MTA before cleaning. Regular cleaning of the MTA should be part of an operator's normal routine.

EXTERIOR

Use a damp cloth to remove dust from exterior of MTA. Use a mild detergent to remove stubborn dirt or ink.

TAPE HEAD

1. Using a camera lens blower/brush or a soft bristled brush, remove dust from all accessible areas of the tape deck with the cassette door open.

2. Clean the tape head and tape guides with cotton tipped swabs and denatured alcohol. Make certain that no cotton strands are left on the head. The tape head should be cleaned after every 40 hours of use.

CAUTION

DO NOT USE CLEANING TAPES.

CASSETTES

Magnetic tape cassettes should be rewound after use and stored in their own containers. Remove any signs of dust from the cassettes with a camera lens blower/brush or soft bristled brush, especially the open tape end of the cassette. Do not use your fingers because contamination could result.

The cassettes should be stored in a clean environment which is non-magnetic or away from tools or metal that could be magnetized. Temperature and humidity limitations are:

Storage:

Temperature	+40°F (4.5°C) to 122°F (50°C)
Relative Humidity	20% to 80%

Operation:

Temperature	+50°F (10°C) to 90°F (32°C)
Relative Humidity	20% to 80%

Magnetic tape cassettes require more care than audio cassettes. Several audio cycles can be missing and still produce acceptable sound. However, each data bit has significance.

AVOIDING UNNECESSARY SERVICE CALLS

Check the following when operating problems occur:

- Make certain all switches on MTA and Printer are set properly.
- Is Write Enable tab missing?
- Try another cassette.
- Clean tape head and tape guides.
- If in doubt, refer to this manual to make certain you are following the procedure correctly.

PART III

TermiNet 30 Printer

Paper Tape Accessory (PTA)

Operator's Manual

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SECTION 1

PTA INTRODUCTION

GENERAL

The Paper Tape Reader and Punch for the TermiNet 30 Printer is mounted on the left side of the Pedestal, with the punch unit at the left rear and the reader unit in front of the punch (see Figure 1-1). The Paper Tape Reader and Punch Control Panel Console is mounted in front of the Reader and Punch units. The Reader and Punch Accessory is designed to operate in conjunction with the Printer. When the Reader, Punch, Pedestal, and Printer are interconnected, the complete assembly is called an Automatic Send-Receive (ASR) configuration.

The Paper Tape Reader is bi-directional (reversible), but it reads (prints out or transmits) only when moving the tape forward. The Reader is equipped with a photoelectric read head to sense the presence or absence of punched holes in the tape, a drive motor with sprocket wheel for positioning and driving the Paper Tape, a tight-tape sensor, end-of-tape sensor, and associated electronics. Reader speeds are up to 10, 20, 30, or 120 characters per second (as controlled by the Printer).

The Paper Tape Punch is equipped with a solenoid-operated punch mechanism, manual backspace, tape feed drive, tape tear-off device, end-of-tape sensor, and removable chad box. A 8½ inch (21.6 cm) diameter tape supply reel is mounted on a spindle below the punch unit. The punch is capable of operating at speeds of up to 30 characters per second. Paper tape used on the PTA should be oiled, commercial grade, 1-inch (2.54 cm), with a maximum thickness of 0.0045 inch (.0114 cm).

CAUTION

Do not use tape made from Mylar or any material other than paper or damage to the punch may occur.

PTL-5032

Figure 1-1. TermiNet 30 Printer ASR Configuration – Printer and Pedestal with Reader and Punch (PTA)

ELECTRICAL SPECIFICATIONS

All power for the PTA is furnished by the TermiNet 30 PTA transformer located below the PTA logic rack. For operation from 100/200/220/240 volt lines, an optional multivoltage transformer which supplies power to the PTA and Printer is also available to replace the standard PTA transformer.

VOLTAGE

Standard: 117 ± 10% VAC, Single Phase

Optional: 100/117/200/220/240 ± 10% VAC, Single Phase

FREQUENCY

60 ± 1 Hz

50 ± 1 Hz

POWER (Total for ASR unit)

At 117V, 60 Hz:

Reading and Printing, 30 cps: 185 Watts
Punching and Printing, 30 cps: 205 Watts
Reading, Punching and Printing, 30 cps: 260 Watts

ENVIRONMENTAL SPECIFICATIONS

The TermiNet 30 Printer with PTA is suited for use in non-airconditioned factory and office environments with the following characteristics:

TEMPERATURE

Operating: +32°F (0°C) to 110°F (43.3°C)

Storage: -20°F (-28.8°C) to 160°F (71.1°C)

RELATIVE HUMIDITY

5 to 95% with no condensation

ALTITUDE

Operating: 0 to 12,000 feet (0 to 3660 m) above sea level.

Storage: 0 to 50,000 feet (0 to 15,240 m) above sea level.

SECTION 2

PTA CONTROL

GENERAL

The PTA Control Panel (Figure 2-1) is mounted in front of the Reader and Punch units. In addition to the controls located on the Control Panel, the following control switches are discussed below: the Reader Tape Out Sensor Switch, Reader Tight Tape Sensor Switch, Punch Backspace Knob, Punch Tape Out Switch, and the main power switch located on the Pedestal. This section also describes the effect of reader and punch control codes. For information on the Printer keyboard, switches, and indicators, refer to the Printer Operator's Manual, GEK-36115.

NOTE

In some cases, optional strapping arrangements provide different reactions to the various controls, sensor switches, and control codes. These variations are described in the text and the operator should determine which (if any) optional strapping arrangements are included in the particular Printer being used.

READER CONTROLS

NOTE

Reader speeds of up to 10, 20, 30, or 120 characters per second are controlled by the Printer.

CONTROL PANEL SWITCHES

See READER and EDIT controls on Figure 2-1.

OTHER READER CONTROLS

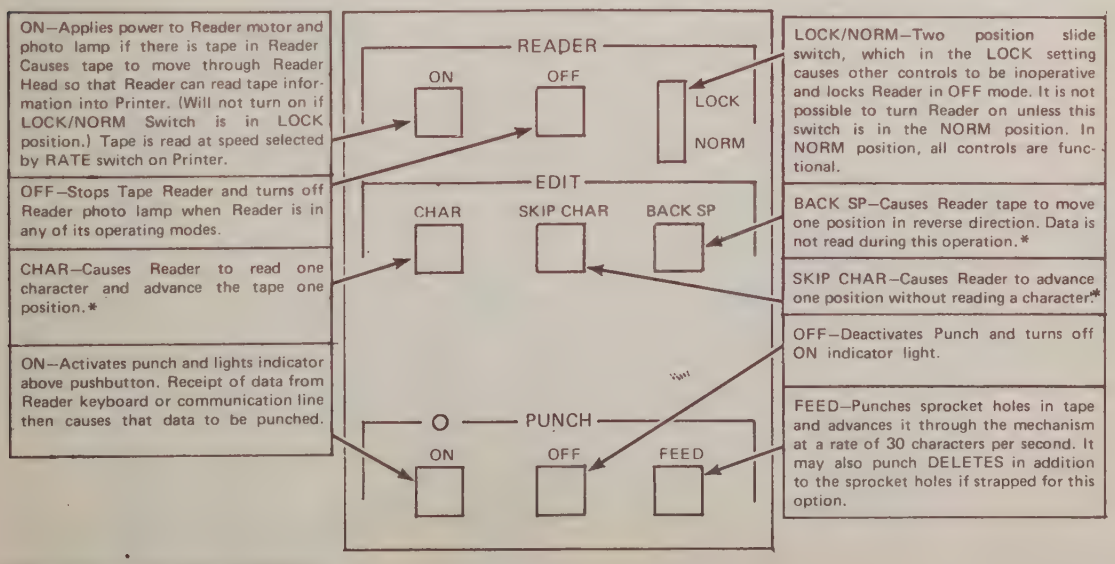
Power Switch—Power to the reader is controlled by the Main Power switch on the Pedestal.

Tape Out Sensor Switch—This switch is located approximately 1¼ inches (3.18 cm) ahead of the read head and senses whether or not there is tape in the reader. When the end of tape is sensed, the reader is automatically turned off and it is inhibited from responding to operator controls or control codes. If there is no tape in the reader initially, the reader is inoperative.

Tight Tape Sensor Switch—This switch is mounted ahead of the read head and senses whether or not the tape is free to be pulled by the reader. If there is too much tension on the tape, the reader is automatically turned off before tape damage can occur.

READER CONTROL CODES

The following control codes are used to control the reader:


ON—Applies power to Reader motor and photo lamp if there is tape in Reader Causes tape to move through Reader Head so that Reader can read tape information into Printer. (Will not turn on if LOCK/NORM Switch is in LOCK position.) Tape is read at speed selected by RATE switch on Printer.
OFF—Stops Tape Reader and turns off Reader photo lamp when Reader is in any of its operating modes.
CHAR—Causes Reader to read one character and advance the tape one position.*
ON—Activates punch and lights indicator above pushbutton. Receipt of data from Reader keyboard or communication line then causes that data to be punched.
READER
ON
OFF
LOCK
NORM
EDIT
CHAR
SKIP CHAR
BACK SP
PUNCH
ON
OFF
FEED
LOCK/NORM—Two position slide switch, which in the LOCK setting causes other controls to be inoperative and locks Reader in OFF mode. It is not possible to turn Reader on unless this switch is in the NORM position. In NORM position, all controls are functional.
BACK SP—Causes Reader tape to move one position in reverse direction. Data is not read during this operation.*
SKIP CHAR—Causes Reader to advance one position without reading a character.*
OFF—Deactivates Punch and turns off ON indicator light.
FEED—Punches sprocket holes in tape and advances it through the mechanism at a rate of 30 characters per second. It may also punch DELETES in addition to the sprocket holes if strapped for this option.

*Photolamp comes on and stays on.

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Figure 2-1. PTA Control Panel

DC1 (Device Control 1) READER ON (Received) - Receipt of this code when the reader is off turns the reader on. Receipt of this code when the reader is already on has no effect.

DC1 (Device Control 1) READER ON (Read From Tape) - Reader may be optionally strapped to automatically turn off after transmitting this code.

DC3 (Device Control 3) READER OFF (Received) - Receipt of this code when the reader is on turns the reader off. (The reader can be strapped not to respond to a received DC3 code.) Receipt of this code when the reader is already off has no effect.

DC3 (Device Control 3) READER OFF (Read From Tape) OPTION A - DC3 is read and transmitted, the tape advances to the next character and the reader is turned off.

OPTION B - DC3 is read and, if it is other than the first character encountered, is not transmitted. The tape is left on the DC3 code and the reader is turned off. When the reader is turned back on, DC3 will be transmitted.

OPTION C - DC3 is read and transmitted. The reader continues to run.

OPTION D - Same as OPTION A in LOCAL. Same as OPTION C when not in LOCAL.

OPTION E - Same as OPTION B in LOCAL. Same as OPTION C when not in LOCAL.

EOT (END OF TRANSMISSION) - The reader is normally strapped not to respond to a received EOT. However, the reader may be optionally strapped so that receipt of EOT when the reader is on turns the reader off. Receipt of EOT when the reader is already off has no effect.

EOT (READ FROM TAPE) - The reader is normally strapped not to respond to EOT read from tape. However, the reader may be optionally strapped so that EOT is read and transmitted, tape advanced to next character, and reader turned off (NOTE: The same strap used in this case is also used in the previous paragraph (i.e., EOT RECEIVED).)

Printer Interrupt - Printer Interrupt turns off the reader when it is first recognized. It does not inhibit the reader from being started subsequently.

TRANSPARENCY (A Printer Control) - When the Printer is in the TRANSPARENCY mode, the state of the reader is not controlled by DC1, DC3, or EOT.

PUNCH CONTROLS

CONTROL PANEL SWITCHES

See PUNCH Controls on Figure 2-1

OTHER PUNCH CONTROLS

Power Switch - Power to the punch is enabled by the main power switch on the Pedestal.

Backspace - This is a small knurled knob located on the side of the punch assembly. Rotation of this knob advances or backspaces the tape one punch position for each step of knob movement.

Tape Out Switch - This switch is located directly before the punch mechanism and senses when there is tape in the punch. When the end of the tape reaches this switch, the punch is automatically turned off, the Printer INTERRUPT indicator is lit and, if the Printer is not in the local mode, a break is generated and transmitted. (Optionally, the no tape function can be strapped so that the INTERRUPT indicator does not light and no break is generated.)

PUNCH CONTROL CODES

The following codes are used to control the punch:

DC2 (Device Control 2) PUNCH ON - Receipt of this code when the punch is off turns the punch on and lights the ON indicator. The received DC2 code is not punched. If this code is received when punch is on, the punch remains on and DC2 code is punched.

DC4 (Device Control 4) PUNCH OFF - Receipt of this code when the punch is on turns the punch off and turns the ON indicator off. The received DC4 will be punched. Receipt of this code when the punch is already off has no effect.

EOT (END OF TRANSMISSION) - The punch is normally strapped to punch EOT and remain on. However, it maybe optionally strapped so that recognition of EOT when the punch is on results in punching EOT. It then turns the punch off and turns the ON indicator off. Recognition of EOT when the punch is already off has no effect.

TRANSPARENCY (A Printer Control) - When the printer is in TRANSPARENCY mode, the punch state is not controlled by DC2, DC4, or EOT. (If the punch is on, these codes and all others are punched.)

SECTION 3

PTA OPERATING PROCEDURES

PREPARATION

The operator should be familiar with the operation of the TermiNet 30 Printer by studying the Operator's Manual, GEK-36115.

Be sure the Pedestal power cord is connected to a properly grounded outlet. Power is then supplied to the Printer and to the Reader and Punch units. Turn the main power switch on the front of the Pedestal to ON. The red POWER ON indicator on the Printer will light indicating that power is on. If there is no paper tape in the reader or punch, proceed with paper tape loading as indicated below.

NOTE

The Reader and Punch used on the TermiNet 30 Printer uses oiled paper tape, commercial grade, 1 inch (2.54 cm) wide with maximum thickness of 0.0045 inch (.0114 cm).

READER TAPE LOADING

Load the tape as follows (refer to Figure 3-1):

1. Pull the spring-loaded forward tape guide toward the front of the console.

2. Place the punched paper tape onto read head and over the lower guide (if applicable), making sure that the sprocket holes in the tape are properly engaged with the teeth of the sprocket drive wheel. (The tape reads from top to bottom.) The sprocket holes are the smallest holes (Figure 3-1).

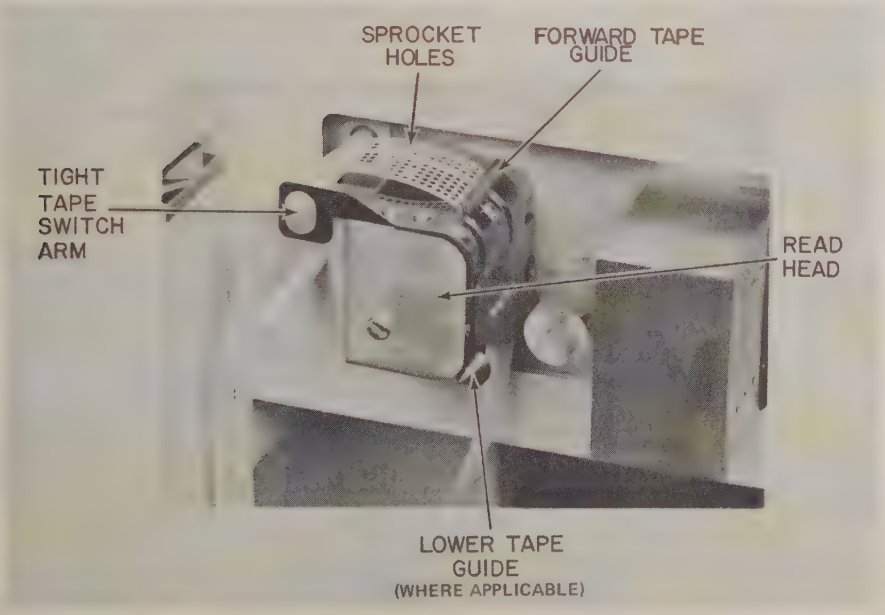
3. Close the spring-loaded tape guide. The Reader is now ready to operate.

Now check that the following conditions exist:

1. The paper tape sprocket holes (smallest ones) are positioned on the sprocket pins correctly.

2. The front of tne tape is going from top to bottom across the read head.

3. The forward tape guide is returned against the tape when the tape is fitted on the sprocket pins.



RAP-5019

Figure 3-1. Reader Paper Tape Loading.

PUNCH TAPE LOADING

CAUTION

Do not use tape made from Mylar or any material other than paper or damage to the punch may occur.

Load paper tape into the punch as follows (refer to Figure 3-2):

1. Place a roll of one-inch paper tape on the supply spool. The tape reel comes apart by counter rotating the halves. Arrows on the reel show the proper direction.

CAUTION

Each new roll of paper tape has the lead end attached to the roll by means of a spot of glue. Tape containing this glue can jam the Punch by sticking in the Punch die. This problem can be avoided if the first few feet of tape from the spool are discarded.

2. Open Punch unit hinged cover.

3. Start paper tape so reel rotates clockwise and tape comes off the back edge (as viewed from left side of the Pedestal).

4. Pull tape hold-down clamp forward to expose the end-of-tape sensor bar.

5. Run tape over tab guides on the assembly cover and across the punch under the end-of-tape sensor bar, through the punch die and under the tape hold-down clamp.

6. If not already done, apply power by operating ON-OFF switch on the Pedestal.

7. Move the hold-down clamp rearward to normal position. Press the hold-down clamp with enough force to indent the tape.

8. While pressing the hold-down clamp, press and hold the FEED pushbutton on the Punch Control Panel until the sprocket engages with the punched sprocket holes (makes a sharp clicking noise).

9. Press ON pushbutton on Punch control panel (red indicator above pushbutton will light).

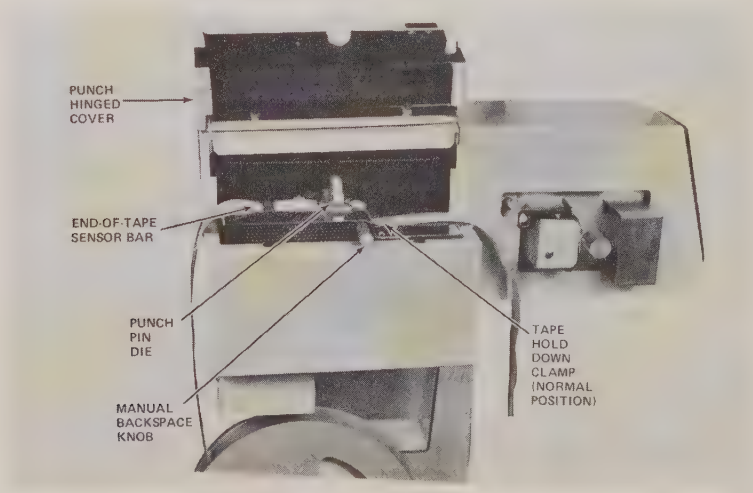
10. Tape Punch unit is ready for operation. Close the hinged cover. Tear tape at tape tear-off device (apply slight pressure to Punch hinged cover while tearing). The shape of the tear-off device imparts an identifying arrow head and tail to show the start and finish ends of the tape.

NOTE

Failure to empty the chad box when it is full can cause tape jamming in the Punch. It is good practice to empty the chad box each time a new roll of paper tape is installed in the Punch. Where the Punch is getting constant use, it may be more convenient to remove the chad box and place a large container (cardboard carton, etc.) directly under the Punch for collecting chad.

CAUTION

Chad particles are sharp and therefore dangerous to the eyes. Also, the chad is highly combustible and should be disposed of with care.



RAP-5020

Figure 3-2. Punch Paper Tape Loading.

READER OPERATION

After the paper tape has been loaded in the Reader, the following functions can be performed with the Printer.

TAPE READING

The photoelectric tape reader reads and transmits data at the speed set on the Printer RATE switch.

The Tape Reader is started by pressing the Reader ON pushbutton and stopped by pressing the Reader OFF pushbutton. With the Printer not in LOCAL and the Data Set Control Option installed, the tape is read as soon as the Clear-to-Send (CB) data set signal is received. If Clear-to-Send (CB) condition is lost, the Reader stops and remains stopped until Clear-to-Send condition returns, at which time reading is resumed. When the Data Set Control Option is not present, the Reader starts immediately without regard to Clear-to-Send.

TAPE EDITING WITH READER

When you punch a paper tape and wish to change the data on the tape or correct an error, scan the printed copy and identify the area to be changed. Then proceed as follows:

1. Place the uncorrected tape in the Tape Reader, turn on the Printer, and select LOCAL mode.

2. Place the LOCK-NORM Switch in the NORM position.

3. Press the Punch ON pushbutton, then the Reader ON pushbutton. This causes the Reader to read the tape and print out on the Printer and simultaneously punch a new tape. Allow the Reader to operate until the incorrect character(s) is nearly reached. Then turn Reader OFF. When the change area is approached, the error can be searched by the character by pressing the CHAR pushbutton on the Reader.

4. For individual errors: Press the SKIP CHAR one or more times as required to advance over the error without reading it. For multiple errors: Turn the Punch OFF, advance the Reader past the defective section, then turn the Punch ON.

5. Type in corrected character(s) from Printer and it will punch on tape. When correction is completed, stop advancing one CHAR at a time and press READER ON pushbutton and the tape will pick up and continue duplicating the original tape.

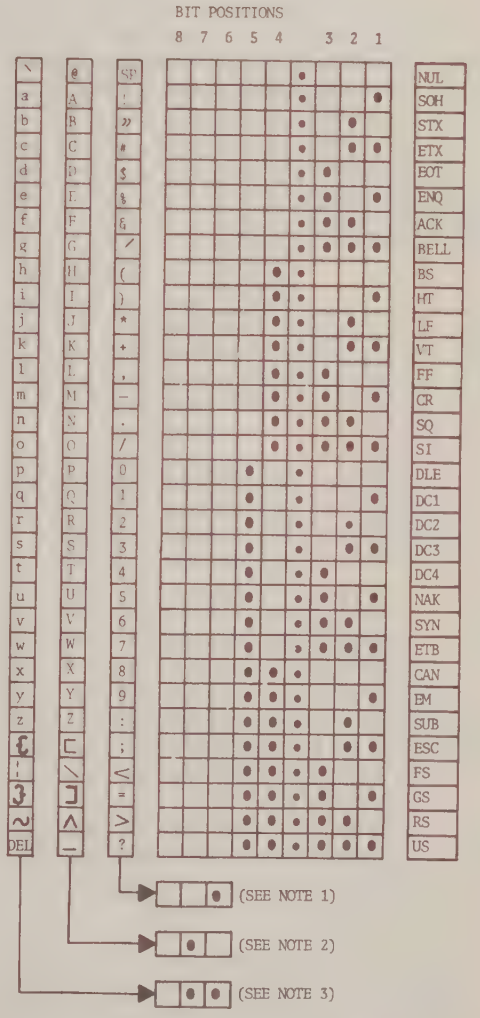
CAUTION

Do not attempt to move tape manually when Reader Lamp is on since damage to tape sprocket holes will result.

PUNCHED TAPE CHARACTER RECOGNITION

It is helpful in preparing and editing paper tapes to be able to recognize the ASCII punched characters on the tape in order to locate specific information.

Figure 3-3 provides a recognition chart for the ASCII Code.



NOTE 1: Bit 6 perforated for all characters in this set. Other bits as marked in main chart.

NOTE 2: Bit 7 perforated for all characters in this set. Other bits as marked in main chart.

NOTE 3: Bit 6 and 7 perforated for all characters in this set. Other bits as marked in the main chart.

NOTE 4: Bit 8 is a parity bit. It will be perforated or not, depending upon the type of parity used and upon the number of perforations making up bits 1 through 7 of a specific character.

RAP-5021

Figure 3-3. Punched Tape ASCII Character Recognition Chart

DUPLICATING TAPE DATA

The Reader and Punch can be operated at the same time as the Punch unit for making duplicate paper tape. If many duplicates are required, the punched tape can be inserted in the read head directly from the Punch. If necessary, press FEED pushbutton to provide enough slack between the units to prevent activation of the Reader Tight Tape Sensor switch.

PUNCH OPERATION

Turn the Printer on, then press the ON pushbutton on the Reader and Punch Console to activate the punch. The red ON indicator over the ON pushbutton will light when the pushbutton is pressed.

Pressing the FEED pushbutton on the Punch produces a tape leader with sprocket holes or a trailer with sprocket holes.

To turn a remote Punch On or Off, hold down the Printer control (CTL) key and press the Punch ON (CTL R) or Punch Off (CTL T) key.

PUNCH OPERATION WITH RATE SWITCH AT 120 CPS

Since the punch can perforate the paper tape at a maximum rate of only 30 characters per second, certain provisions must be made for situations where 120 characters per second are being received.

When receiving data at 120 cps from an external source, the character being received is completely punched before any attempt is made to punch a subsequent character. Although three-fourths of the characters are missed (i.e., not punched) because of this, all received characters are decoded to ensure that no control codes are missed.

When receiving data from the local reader or keyboard, the punch activates an internal signal which automatically limits transmission to 30 cps (even when Rate switch is set at 120 cps).

When not in Full Duplex mode, the recommended method of transmitting from a Printer (or Reader) to a remote 30 cps punch is to turn on the local punch during the period of this transmission. Transmission will then automatically be limited to punchable speed.

When in Full Duplex mode, the Reader runs at speed dictated by Rate switch and speed of transmission to remote punch cannot be limited to 30 cps and some characters may not be punched.

QUICK CHECK OF READER AND PUNCH OPERATION

One method of testing the units is by using a test tape:

1. Press the Punch ON pushbutton, then press the tape FEED pushbutton to obtain approximately six inches of leader.

2. Type several DELetes from the Printer.

3. Type Reader Off (CTL S).

4. Type your name, date, and company, etc.

5. Type several Cap U's and asterisks alternately.

6. Type anything (short saying, company, motto, etc).

7. Type Cap S, CR (RETURN), LF and CTL S (Reader Off).

8. Type several DELetes and then press Punch tape FEED pushbutton to make a trailer (approximately six inches).

9. Tear tape at tape tear-off device (hold Punch hinged cover while tearing).

10. Insert this tape into the Reader.

11. Press Reader ON pushbutton to read tape. Tape will stop at first Reader Off. Press Reader ON pushbutton again.

12. Tape data will print out on the Printer and be duplicated by the Punch.

13. Verify printout and the duplicated tape; if correct, both units are working properly.

Save tape for a quick check on the Reader and Punch operation in the event a problem arises. If the tape does not print or duplicate correctly, or if the tape stops (press Reader ON pushbutton) at other than Reader Off code (such as at Cap S) then a fault is present in the equipment. Call your serviceman for repair or adjustment. (Give him symptoms if possible.)

SECTION 4

TAKING CARE OF THE PTA

CLEANING

Minimal operator time is required to keep the Reader and Punch units operating correctly. A few important care hints are as follows:

1. Empty the chad box when installing a new roll of paper tape in the punch or whenever it is nearly full.

2. Clean the photosensor window and the forward and lower tape guides (see Figure 4-1) with denatured alcohol and a soft lint-free cloth or cotton swab (about every other time you put on a new roll of paper tape).

3. Use a dry, lint-free cloth to clean the condensing lens. Same interval as step 2.

Use a clean soft bristle bursh (not typewriter hard bristle) to clean chad off of the punch when cleaning other parts as described above.

CHAD REMOVAL FROM PUNCH DIE

Chad may accumulate in the Punch Die and cause tape jamming. If this occurs, remove the chad with the chad cleaning tool (Figure 4-2). To use the chad cleaner, insert it in the die portion of the punch in the same location as the paper tape normally occupies. Hold the tool by the end containing the hole and use scraping edge 1. Use sawing action to remove chad. Use edge 2 to clean severe jams by using both hands and sawing back and forth.

Extra chad cleaners may be obtained by contacting Customer Service, DCPD, Waynesboro, Virginia 22980.

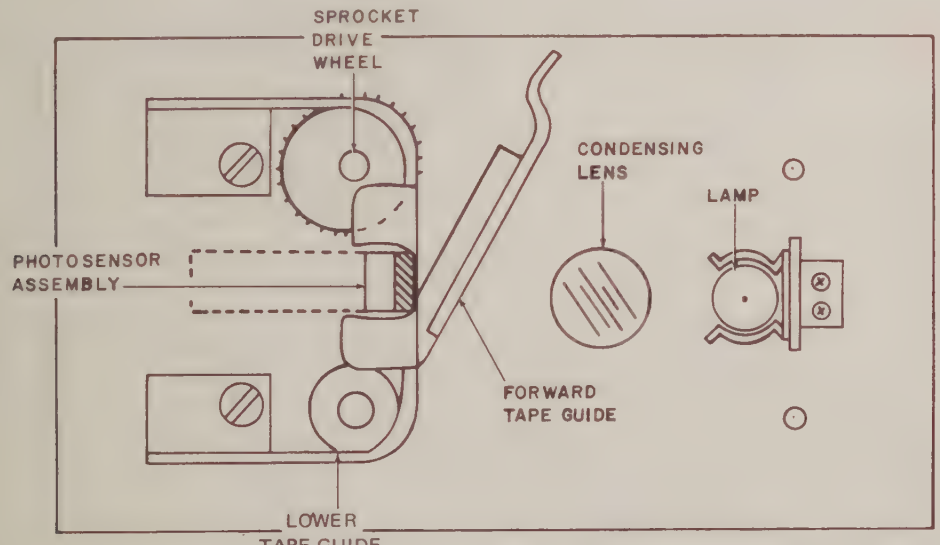


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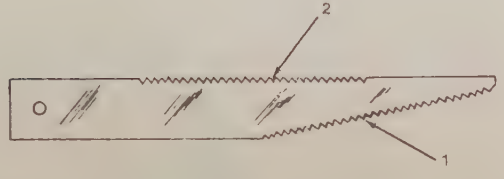
Figure 4-1. Reader Components



RAP-5018

Figure 4-2. Chad Cleaner

TermiNet* DATA COMMUNICATION PRODUCTS

TermiNet 30 MAGNETIC TAPE ACCESSORY (MTA) OPERATING INSTRUCTIONS FOR EXPANDED SEARCH MODE

This addendum includes the differences between the MTA Control Panel which provides Code Function search capability, and the MTA Control Panel which provides Expanded Search capability. Basic switch and indicator functions provided for the MTA in the TermiNet 30 Printer Operator's Manual remain the same for the Expanded Search MTA except as herein noted.

A comparison between Figure 2-2 in the MTA Section of the TermiNet 30 Printer Operator's Manual and Figure 1 in this Addendum shows the differences between the control panels:

1. The rotary Code Function Selector Switch on the Code Function Search MTA is not needed on the MTA with Expanded Search capability.
2. On the Expanded Search MTA, switches and indicators have been relocated into three groups (READ, TAPE, and WRITE) for operator convenience.
3. The Expanded Search MTA employs a READ FILL switch in place of the SKIP FILL switch used on the Code Function Search MTA so that SYN fill characters are normally deleted unless the READ FILL switch is pressed.
4. The SEARCH FWD and SEARCH REV switches on the Code Function Search MTA have been replaced by simplified BLOCK FWD and BLOCK REV switches on the Expanded Search MTA. As indicated, pressing the BLOCK FWD switch moves the tape forward to the next interblock gap (IBG), and pressing the BLOCK REV switch rewinds the tape to the previous IBG.

SEARCH OPERATION

One the Code Functon Search MTA, searching can be conducted as a local mode function only. In this method the tape is searched for a switch-selected index code (FS, GS, RS, US) which had been entered on the tape along with stored data (and usually listed in a file index log by the preparer as well). In the forward search mode the tape stops at the next IBG following the code being sought. The tape is then rewound to the previous IBG, and the data read (printed) out.

The Expanded Search method does not require the entry of index codes onto the tape. It utilizes a recognized ESC K character sequence from either the local terminal keyboard or from a remote source, followed by 1 to 16 characters (a portion of the previously recorded data) as the search message. After entering the search message, another character sequence (ESC L) is used to begin searching the tape until a comparison is made between the stored search message and the data recorded on the tape.

NOTE

The ESC K and ESC L character sequences cannot be a part of the search message.

The tape stops in the IBG following the last character of the search message. In Local operation the tape may then be read by pressing the required data read switches (READ CONT, or READ BLOCK, LINE or CHAR). When searching a remote MTA, data is locally read out when the remote MTA receives a READ CONT code (DC1).

The printout begins with the complete search message and whatever additional data is included in the block immediately preceding the IBG where the tape stopped. Additional required data follows, in accordance with the READ switch postions. In other words, the search message and required following data is printed out without requiring any BLOCK REV operation.

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The information contained herein does not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to General Electric Company, USA.

At the completion of this sequence of events, the search message is still stored in the search memory buffer (exception: see NOTE below); it is not necessary to re-enter ESC K and the search message to accomplish additional forward searches for the identical data. It is only necessary to enter ESC L to initiate a search for another comparison between the stored search message and data recorded on the tape.

NOTE

A recognized ESC K character sequence or power off condition will erase the stored search message.

Once tape motion starts after recognition of the ESC L sequence, tape motion continues until a data-to-search message comparison occurs, or until the end of tape (EOT) is detected. The FAST FWD, STOP, and LOCK control panel switches will override the search mode. The search mode may be initiated only if the MTA is in the STOP mode. Also, the TRANSPARENCY mode disables the MTA search function.

NOTE

A strap option is available which limits the search message to a single character.

EXAMPLE 1: LOCAL EXPANDED SEARCH MODE

To search for specific data on a magnetic tape cassette installed in a local Expanded Search MTA, proceed as follows:

1. If dual MTA, place unused unit in LOCK mode.
2. Enter ESC K via keyboard.
3. Enter search message (not to exceed 16 characters).
4. Enter ESC L via keyboard. The MTA begins search and stops at IBG following last character of search message.
5. When tape motion has stopped, print out search message and required data as follows:
   a. For long data printout: Press READ CONT. Data prints out until STOP is pressed or EOT is reached (if RDR OFF codes are not recorded on tape).
   b. For short data printout: Place BLOCK/LINE/CHAR switch in position to select desired segment of data to be read. Then press READ SINGLE switch. One block, line or character of data prints out.
6. If search message has not been erased (by ESC K or power off condition), additional forward searches may be made for data following the same search message. Alternatively, tape may be rewound and a new search instituted by repeating the foregoing steps using a different search message.

EXAMPLE 2: REMOTE EXPANDED SEARCH MODE

To search for specific data on a magnetic tape cassette installed in a remotely located Expanded Search MTA with which you are in communication, proceed as follows:

1. Enter ESC K.
2. Enter search message (not to exceed 16 characters).
3. Enter ESC L. The remote MTA begins search and stops at IBG following last character of search message.

NOTE

When communicating with a remote dual MTA having two tape cassettes containing data, the tape interrogated will be the one strapped to be in the READ mode (normally the left unit).

4. Enter DC1. Remote MTA begins READ CONT mode. If DC1 is entered before completion of search, it will have no effect. In this case, repeat DC1 after an interval of time.
5. Enter DC3. Remote MTA switches to STOP mode in IBG following receipt of DC3 code (if tape is in motion). Any data in remote MTA buffer which has not been transmitted upon receipt of DC3 will be erased from the buffer if the next code it receives is any code other than a DC1, as noted in the CONTROL CODES table of the Operator's Manual of which this is an Addendum. READER OFF codes can be used on the original data tape to avoid this situation if required stop locations are predetermined.
6. The above sequence can be repeated for another search from this point on the tape, or the tape can be rewound and a new search message initiated. (ESC DLE DEL sequence rewinds to beginning of cassette).

TAPE

BLOCK FWD (Forward) Switch
When pressed, the tape moves forward to the next interblock gap and stops.

BLOCK REV (Reverse) Switch
When pressed, the tape rewinds to the previous interblock gap and stops.

LOCK Switch**
When pressed, the MTA stops and the tape control logic is disabled. When the MTA is in the lock mode, all local switches are disabled and the MTA cannot be remotely controlled. The STOP Switch must be pressed to take the MTA out of the LOCK Mode.

STOP Switch *
When pressed, the MTA goes to the Stop Mode. This switch overrides all tape motion switches. If pressed during the Read or Write Mode, the MTA will complete reading or writing the present block of data and stop.

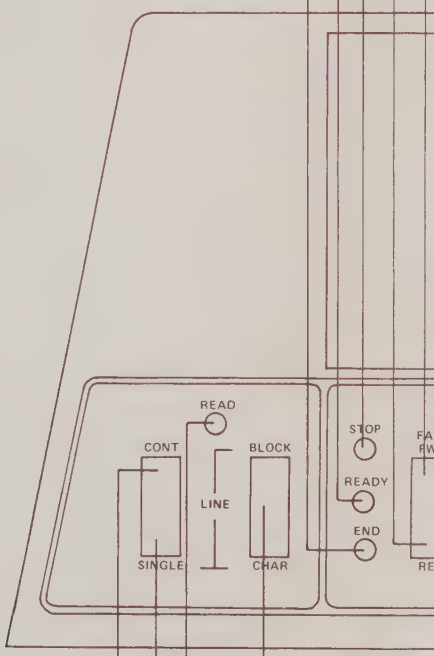
FAST FWD (Forward) Switch
When pressed, the MTA moves the tape in a fast forward direction until the STOP Switch is pressed or the MTA senses EOT. FAST FWD overrides the Read, Write, and Search Modes. FAST FWD in conjunction with WRITE ENABLE will erase data as the tape is advanced.

FAST REV (Reverse) Switch
When pressed, the MTA rewinds the tape until the STOP Switch is pressed or the MTA senses BOT. FAST REV overrides the Read, Write, and Search Reverse Modes.

STOP Indicator
Lights when MTA is in Stop Mode.

READY Indicator
Lights when a tape cassette is properly inserted, power is applied, and the MTA is not in the lock mode.

END (End of Tape) Indicator
Lights when EOT is sensed. The indicator will remain lit until reverse motion is initiated or the LOCK Switch is pressed. The Read and Write Modes are inhibited when the END Indicator is lit.



READ

READ CONT. (Continuous) Switch
When pressed, the MTA goes to the Read Mode and continually reads blocks of data until stopped either by the STOP Switch, a Control Code, or no data on tape.

READ SINGLE Switch
When pressed the MTA goes to the Read Mode and reads a single block, line or character as selected by the LINE, BLOCK, or CHAR Switch, then stops. Additional selected segments of data are read each time this switch is pressed.

READ Indicator
Lights when MTA is in Read Mode.

BLOCK, LINE, CHAR Switch
Selects the segment of data to be read when the READ SINGLE Switch is pressed.

READ FILL Switch
When pressed while in the Read Mode, all SYN characters recorded on the tape will be transmitted. If not pressed, SYN characters are excluded from transmission for faster information thruput.

Figure 1. Expanded Search Magnetic Tape Acce

WRITE

WRITE BLOCK Switch
When pressed (along with the WRITE ENABLE Switch), the MTA goes to the Write Mode and writes one block of data on tape, then goes to the Stop Mode. WRITE BLOCK is normally used during editing or data replacement recording to ensure an adjacent data block is not overwritten.

WRITE CONT (Continuous) Switch
When pressed (along with the WRITE ENABLE Switch), the MTA goes into the Write Mode and writes consecutive blocks of data tape until the MTA is placed in the Stop Mode, tape runs out, or data in stops.

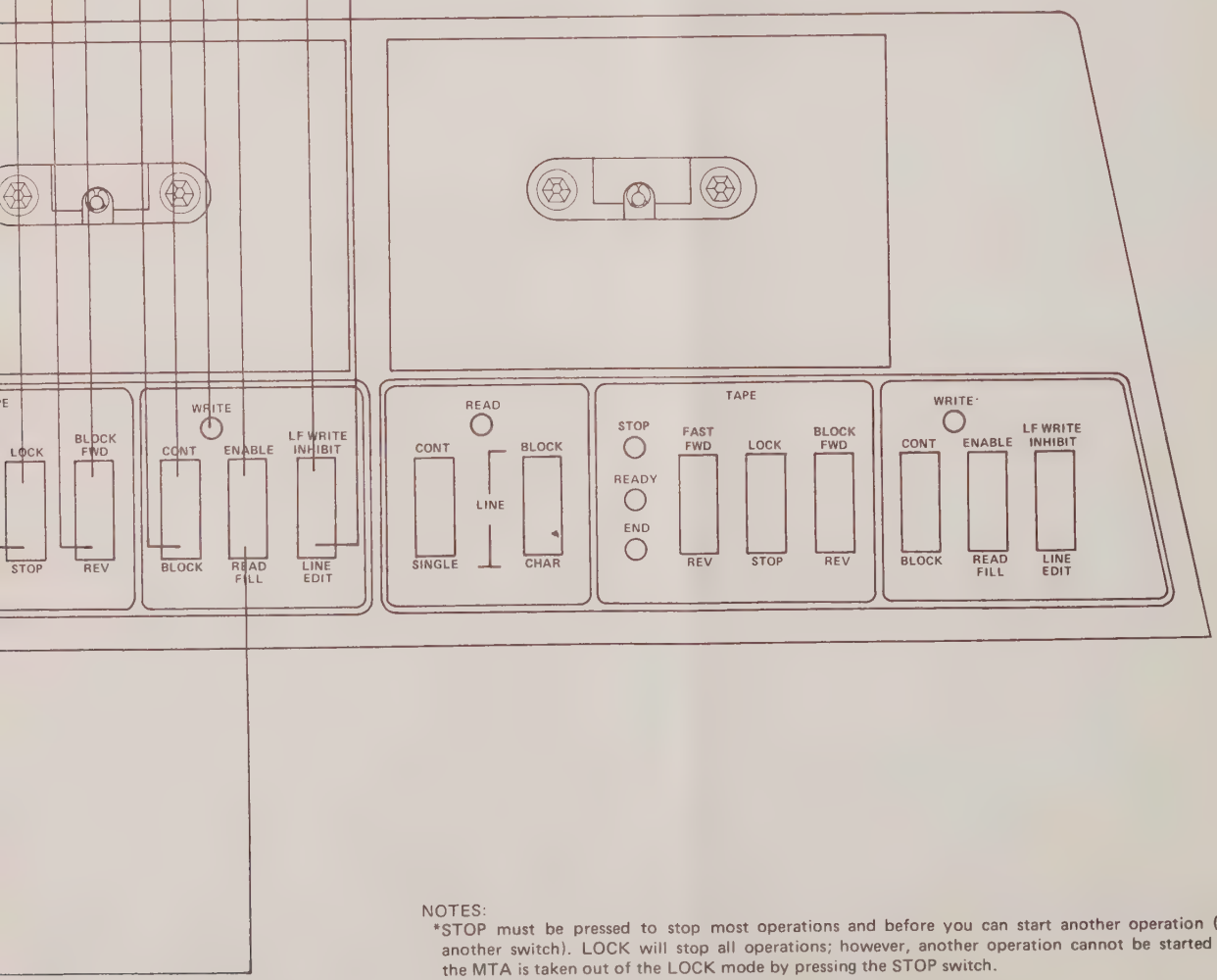
WRITE Indicator
Lights when MTA is in Write Mode.

WRITE ENABLE Switch
This is an interlock; it must be pressed in conjunction with either the WRITE CONT or WRITE BLOCK switch to put the MTA in the Write Mode. WRITE ENABLE in conjunction with FAST FWD will erase data as the tape is advanced.

LF WRITE INHIBIT Switch
When pressed while in the Write Mode, the LF character will not terminate the data block. This switch is used to:

a. Allow keyboard entry in packed block format when the Printer is in the local mode.
b. Allow block replacement (editing) when the replacing data block contains a LF before the end of the data block.
c. Allow duplicating tapes, made in a Line format, to be more efficiently recorded in a block format (used in conjunction with the READ FILL Switch).

LINE EDIT Switch
When pressed while in the Write Mode, all LF characters are not recorded except those which are entered from the Printer keyboard. This switch is used in the Write Mode when editing with dual cassettes.



NOTES:
*STOP must be pressed to stop most operations and before you can start another operation (press another switch). LOCK will stop all operations; however, another operation cannot be started until the MTA is taken out of the LOCK mode by pressing the STOP switch.

**The LOCK Switch must be pressed before removing or inserting a cassette.

MTA-6004

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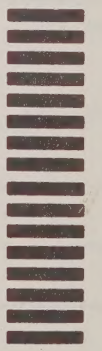

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